ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF

The Illinois State Medical Society

PUBLISHED AT SPRINGFIELD, ILL.

GEORGE N. KREIDER, M. D., Editor

INDEX FOR VOLUME XVII

JANUARY TO JUNE, 1910

ILLINOIS MEDICAL JOURNAL

THE OFFICIAL ORGAN OF
THE ILLINOIS STATE MEDICAL SOCIETY

ENTERED AT THE SPRINGFIELD POSTOFFICE AS SECOND-CLASS MATTER

VOL. XVII SPRINGFIELD, ILL., JANUARY, 1910 NO. 1

ORIGINAL ARTICLES

MISTAKES AND MISCONCEPTIONS WITH REGARD TO THE MODERN TREATMENT OF TUBERCULOSIS.*

J. W. PETTIT, M.D.
Medical Director, Ottawa Tent Colony
OTTAWA, ILL.

The purpose of this paper is very clearly set forth in the title. No attempt is made to discuss the strictly scientific aspects of pulmonary tuberculosis nor give expression to any advanced views, but to show wherein the treatment fails in many instances and why. The opinions expressed are based upon some years' experience, and while this does not entitle me to speak *ex cathedra,* I believe there are many problems connected with the application of the treatment which none of us fully appreciate until we have had some extended experience. In order that we may get a more comprehensive view of the situation, I will first briefly review what has thus far been accomplished in this state. Six years ago, when the tuberculosis propaganda was first inaugurated by the organized medical profession of this state, we were confronted by the popular and to some extent professional belief that tuberculosis was an incurable disease, or if curable, only under certain climatic conditions. This conviction had become so deeply rooted that it seemed a hopeless task to change opinion on this subject. The campaign of education which was then inaugurated has resulted in such a change of public and professional sentiment that now the belief is general not only that tuberculosis is curable, but also that climate is not an important factor. This somewhat sudden, and very radical change in sentiment has resulted in the pendulum swinging too far. The public generally, and, unfortunately, many of my own profes-

* Read before the South Side Branch Chicago Medical Society, Dec. 30, 1909.

sion, have come to believe that tuberculosis is very easily cured and that by very indifferent methods. We now find ourselves confronted with conditions which threaten to discredit our efforts unless we can keep the enthusiasm which we have so successfully stimulated within reasonable bounds.

Marked apathy and hopeless indifference has changed to extraordinary zeal, and as is often the case, those who have been among the first to advocate certain measures, which we know to be of value, find ourselves obliged to take a rather conservative position lest the extravagant claims made by our converts shall result in a reaction of sentiment and a consequent unreasonable prejudice against methods of treatment, which, when rationally used, are of infinite value to thousands of sufferers. In this somewhat conservative position I find myself at present, and while not wishing to be regarded as abating my enthusiasm for sanatorium treatment, I want to sound a note of warning against the extravagant claims which are being made by many who have only superficially studied the subject.

I wish in this public manner to make acknowledgment of what we owe the press for their assistance in this great crusade, without whose assistance we could have accomplished but little, yet the flaring and exaggerated statements which often appear in the press of what has been accomplished are often such as to make the judicious grieve. Exaggeration of the facts only serves to weaken the cause in the end, for the misguided individuals who rush to the sanatorium for aid in the hope of healing a far-advanced lesion, meet with disappointment in the majority of cases. In the bitterness of their disappointment they and their friends are quite apt to denounce the whole system as a fraud, simply because they have been misled by the false statements of those who are not familiar with the facts, and in spite of the protests of those who are doing their utmost to correct these mistakes and misconceptions.

The fundamental principles of treatment and the agencies employed are so generally accepted that these need not be discussed. The agencies used are so familiar that it has led to a prevailing impression that the treatment is very simple and easy, hence requires no particular skill in its application. This has led to much confusion and many disappointments, and unless these mistakes and misconceptions are corrected it will inevitably bring the treatment into undeserved disrepute. Now is the time to sound a note of warning. If we wait until the evil consequences of our mistakes are upon us it will take a long time to re-establish confidence in a system of treatment which, when properly applied, is, for the present at least, the only hope for the consumptive. It will be a calamity if the magnificent enthusiasm behind this crusade which it has taken years to evolve and concentrate shall be a mere *brutum fulmen*, as it will be unless the plans in which it finds expression produce promised results. I wish therefore to call attention to the conditions under which we are now working and the exaggerated expectations as to results, and point out if possible how these may be corrected.

Experience has demonstrated very conclusively that the sanatorium provides the only reasonably certain method for effecting a cure in a large majority of cases. Its value is beyond that of any other method known, since in it we are able to combine every agency required for treating our patients successfully. The object of the sanatorium is to systematize and perfect the treatment in such a way as to give the patient the advantage of every detail, however small, which will tend to keep the balance in his favor. It means a systematic, regulated life, under rigid discipline and routine; the constant watchfulness of every symptom, not by the patient himself, but by well-trained nurses and physicians of experience. The constant supervision of the patient is the most important point in which sanatorium treatment must necessarily differ from that adopted by the general practitioner. It is not so much medical *treatment*, as this is ordinarily understood, as medical *supervision*, of which the patient stands in need. Living with the patients, adopting their mode of life, having his meals in common with them, the physician is enabled to individualize the treatment. He studies the patient from every aspect, and his life is laid out in detail. There is a fixed hour for rising and retiring. He is told what time is to be spent in walking and resting. He is told what to eat and what to avoid. Regulation of the body functions, proper attention to clothing, hours for temperature observations, special care in the disposal of sputum, and that he is in no danger to himself or others when this is properly done. Experience has abundantly demonstrated the importance of the sanatorium as a desirable and even essential institutional center for the conduct of effective hygienic-dietetic measures, and as an educational school for rational living. Fads and fancies have gathered about the so-called "open-air" treatment, and impossible claims have been made by inexperienced enthusiasts as to the almost miraculous efficacy accruing from sanatorium residence. In spite of all these exaggerations and failures, there can be no doubt but that the maintenance of a strictly hygienic course of living offers the best means known to modern medical science for dealing effectually with tuberculosis. The difficulty in bringing early cases to seek medical advice, and the often unavoidable delay of admitting patients, the financial and other obstacles to continuing treatment for a sufficient period, the impossibility in many cases of permanently reforming the habits of living and securing healthy conditions for the conduct of suitable work, the failure to maintain medical after-care, make it astonishing that sanatorium results are as good as they are, and is added proof of the strong tendency of tuberculosis to a recovery even under adverse conditions.

The disease is chronic, and the treatment consequently a long one. It is most exacting as to details, and the best results are secured only by those who are familiar with the varying types of the disease and all the minute details of the treatment. In other words, the patient must be under close observation all the time, and this can be best secured in a sanatorium. The sanatorium exists because it has been found to be a necessity. It offers the tuberculous invalid the most practical and economical method of fighting his disease and acquiring hygienic education

in its prevention. The conditions of treatment and its limitations are not recognized, however, hence the necessity for a better understanding of the situation in order to achieve the best possible results.

The four factors which at present tend to discredit the treatment are: 1. The large percentage of hopelessly incurable cases admitted. 2. The popular belief that a cure can be effected in a few weeks. 3. The failure to recognize that the patient is usually more of a problem than his disease. 4. The attempt to carry out the treatment in the home.

Early Diagnosis.—No factor in the treatment is more essential to success than an early diagnosis. When we speak of the curability of this disease as applied to a large majority of cases the statement pre-supposes an early diagnosis. The opinion prevails that those admitted to sanatoria if not incipient, at least come within the easily curable class. This is far from the truth, as shown by the fact that in the institutions in this country there is an average of only 10 per cent. incipient, of which 90 per cent. are curable; 60 per cent. advanced, of which 50 per cent. or more may be cured; and 30 per cent. far advanced, of which only 2 or 3 per cent. are curable. These are the conditions under which the sanatoria are working, and will account in part for the many failures which must be charged up to them. While it is true that a much larger percentage of the two latter classes may be cured, this can only be accomplished by an expenditure of time, courage and money out of all proportion to what many patients can bring to the task. The reason for this condition of affairs is apparent. We have so recently emerged from that long night of despair, which until recently overshadowed the consumptive, that we have not yet had time to educate the public to the necessity for an early diagnosis, and the medical profession how to make it. In the meantime, the sanatoria have been compelled to take many undesirable cases. This is what they should do, but it should at the same time be understood that by reason of this fact the present results must not be accepted as a criterion of the possibilities of the treatment. In estimating the value of the sanatorium treatment, three very important considerations must be kept in mind. The stage of the disease on entrance, the time under treatment, and the environment to which the patient returns.

Time Element.—Tuberculosis, even in its earliest stages, is not susceptible of a cure under the most ideal conditions within a few weeks. An incipient lesion requires for its eradication not less than two years, although the patient may to all appearances be perfectly restored to health in a much shorter time. Since the treatment of tuberculosis has for its object the arrest of the process, and that arrest is practically fibrous encapsulation, it is all important that the arrest should be so perfect that under proper living and hygienic surroundings there will be little or no danger of a relapse.

As to the time required after arrest, before we can say our patient is cured, there is no stated period. It depends upon many factors, such as the extent of the lesion, the virulence of the bacilli, the recuperative powers of the patient, together with his mode of life and general surroundings. Experience has demonstrated that an average of six months'

institutional treatment in early cases usually suffices to place a patient on the safe side, so that with a little help now and then from his family physician he may be trusted to look after himself. In advanced cases, the patient should be warned that more time will be necessary to accomplish a good result. It is a mistake to put a time limit upon the treatment in advance, and when this is done often leads to such disappointment as seriously to handicap the patient in his struggle for health.

The prevailing opinion seems to be that the tuberculous invalid has only to go to a sanatorium for a few weeks to be cured. Three months is the time usually designated. This advice is very misleading. All the treatment amounts to with many of the short-stay patients is simply to carry them to an arrest of the active symptoms which deludes them into a false sense of security, and for the time deceives them, their friends and the public. These are the so-called "cures" which in the near future will be collected by some statistician, who will from the history of such cases prove the instability of the modern treatment of tuberculosis and the consequent failure of sanatoria to produce permanent results.

The percentage of relapses is in direct ratio to time of treatment. Those remaining a few weeks, especially if advanced, as most of them are under present conditions, derive but little permanent benefit. No matter what gain the short-stay patient makes, relapse sooner or later is the rule, while of those discharged as apparently cured a very large majority prove to be permanent cures. This is shown by the reports of the leading sanatoria the world over, the results being uniformly the same in all under like conditions.

I quote from the last annual report of a leading sanatorium in this country:

"Of late, greater insistency has been laid upon the advice given to patients to remain in the sanatorium for a longer period of residence in order to insure better results of treatment. With this in mind, it is interesting to note that during the past year of the 158 cases reported upon and who represented upon their admission to the sanatorium all stages of the disease, 21.52 per cent. were discharged 'apparently cured' in an average duration of residence of 43.09 weeks, as against 18.80 per cent. of 'apparent cures' in 1907, in an average duration of residence of 31.44 weeks, and 16.45 per cent. of 'apparent cures' in 1906, in an average duration of residence of 25.26 weeks. This increase in the percentage of 'apparent cures' is not so much attributable to improved methods of treatment as to the longer stay in the sanatorium. This is particularly noticeable in the class of twenty-five incipient cases among whom we were able to discharge 72 per cent. of 'apparent cures' during the past year, with an average duration of residence of 25.72 weeks, as against 46.43 per cent. of 'apparent cures' of incipient cases in an average duration of residence of 18.78 weeks last year. The same increased duration of residence will be found in connection with the favorable results throughout this report, and is certainly an argument for a longer duration of residence in the sanatorium." It will be noted that the addition of seven weeks in the incipient class almost doubled the percentage of "apparent cures."

The so-called "educational method" of sending patients to sanatoria for a few weeks to "learn the treatment," and then attempt to carry it out at home, is not only misleading many patients, but seriously handicapping the work of the sanatoria. Such advice is as pernicious as it is misleading, and shows that those who give it fail to appreciate the seriousness of the disease and the difficulties in applying the treatment. The argument is plausible and the attempt a laudable one, but it is unfortunate that the plan is a failure. This attempt to make our present very meager sanatorium accommodations meet the demands of the situation discredits the sanatorium without aiding the home treatment. It were far better to direct our energies to the building of more sanatoria than to discredit the efforts of those now in existence by insisting upon a policy which physicians in charge of these institutions know is impossible of accomplishment.

The most striking illustration of the failure of the so-called "educational method" comes from Germany, where in an attempt to enlarge the usefulness of the public sanatoria, they restricted the residence of strictly incipient cases to a few weeks. The experiment was tried in many thousands of cases with a mortality of 75 per cent. Whereas 75 per cent. were cured by six months' treatment. This is practically the experience of sanatorium physicians everywhere, and those who assume the responsibility of telling a patient he will be cured by a short stay should understand the folly of such a course. But what of the patient who for financial reasons cannot remain in the sanatorium long enough to effect an apparent cure? No hard and fast rules can be laid down to follow in all cases. It must be admitted that the short-stay patient does get some benefit and that his chances of recovery are improved somewhat. Whatever else may or may not be done, he should be told frankly the time that will probably be required, and that if he is not able to comply with this condition then he must decide for himself whether he desires to enter upon a short course of treatment which will improve his chances of a recovery, but not sufficient to effect a cure. No patient should be encouraged to enter upon the treatment without an understanding of all the conditions and a full determination to carry them out. There is no short cut or royal road to a cure in tuberculosis. The conditions are exacting, and in nothing more so than in the time element, and attempts to compromise or depart from well-established methods usually results disastrously.

It is a serious matter to advise a patient with tuberculosis, and I fear we do not always appreciate our responsibility. The advice to go to a sanatorium for a few weeks without being fully advised and properly equipped is as irrational as the advice to go west and rough it, or to stay at home, live out of doors, drink all the milk, and eat all the eggs possible. To illustrate what exaggerated ideas are entertained as to the ease and simplicity of the treatment, it is only necessary for me to state that many requests are made by letter for information as to how to conduct the treatment at home without even the aid of the family physician. In one instance an Episcopal bishop of a neighboring state came to me for advice

as to how to treat his son at home. He not only expected proper directions, but was in such haste to get back on the next train that he had only a few minutes in which to get this information. Such mistakes and misconceptions lead to farcial attempts that would be ludicrous if they were not so serious. It is as pathetic as it is disheartening to see the vain attempts to accomplish a possible end by such impossible means.

The Patient.—In the discussion of this subject the attitude of the patient is rarely ever, or at least only incidentally, regarded as a factor. We approach the treatment of the case entirely from the physical side, and on the assumption that the patient has an intelligent appreciation of his danger, and that we can count upon his cooperation. Herein is where we err, and that seriously. The average patient is more of a problem than his disease. There is a wide difference between treating a patient who is consciously sick and one who is not; one who is helpless and must obey our directions and one who is not. The patient with pneumonia, typhoid fever or a broken leg is constantly reminded by his suffering and helplessness that he is sick; therefore is ready and willing to accept the advice and assistance of his physician. With tuberculosis it is radically different. As a rule, he does not suffer, therefore is not consciously sick, which leads him to do many things to his detriment because he is not constantly reminded by his pain and helplessness as in the case of acute disease. He estimates his danger according to his own interpretation of the severity of the symptoms. A slight hemorrhage from which there is no particular danger will strike him with terror, while a high fever, rapid pulse or other really dangerous symptom he regards lightly. Exuberance of spirits when he is approaching convalescence leads to excesses which are innocent enough under normal conditions, but apt to be injurious and not infrequently fatal when indulged in by the tuberculous patient. We are constantly reminded by our patients when cautioned against indiscretions which experience teaches us are dangerous, that there can be no risk because they "feel so well." The patient is guided by his feelings in everything he does, which makes him difficult to control. In no disease perhaps is the patient inclined to be more erratic and do irrational things than in tuberculosis. Many for a time make a good fight, but for lack of conservative judgment, and on account of over-confidence, what seemed to be certain victory is turned to a sudden defeat. When really ill, he is brave. When convalescent, he is brave no longer. It seems to be characteristic of the tuberculous patient to take risks. If two courses are pointed out to him, one safe and reasonably certain, and another shorter but involving hazardous risks, the average patient will take the shorter course. This is a factor which should always be taken into account in dealing with the tuberculous invalid. It is a perfectly natural, though none the less fatal, tendency on the part of the afflicted to choose at almost any risk the shorter course to health in preference to the longer but more rational avenue—a tendency to combine the maximum of pleasure and comfort with what is at best a difficult struggle. With little or no knowledge of the strategy of the common foe he attempts to command his own forces, and for some rash act of foolish

bravery or lack of judgment what might have been a victory terminates in disappointment and defeat. This is due to his characteristic optimism and egotism, and is one of the great obstacles to successful treatment. It is one of the hardest lessons the consumptive has to learn that a cure of his disease cannot be attained by way of the primrose path—that it involves sacrifice of much of what he deems essential to his happiness, or even to his tolerable existence, and that these sacrifices must be made voluntarily, and even enthusiastically if he hopes to make them bear fruit. It is very difficult to impress him with the gravity of his position, and especially during the incipient stage or when convalescing. While it is a very painful and unpleasant thing to be sick, its dangers do not compare with the dangers of getting well. Anybody can be sick, but it takes a wise, patient and careful person to get well successfully. The dangers of getting well are oftentimes greater than those of being sick. This is a fact which is not usually appreciated until the patient has by his own folly and blundering made mistakes which often do irreparable damage and oftentimes cost him his life. The average tuberculous patient does not want to get well. That is to say, he does not want to pay the price. He will gladly pay the price in money, but not in courage, self-denial, patience and all those other elements of character which are even more necessary than money. These he must supply for himself, and without these characteristics all else that may be done will avail nothing. Character plays such an important part in the treatment that it is reasonably exact to say that the weak mercurial patient who does things half-heartedly, who is constantly vacillating between duty and desire, or who does his duty only under the spur of fear, is almost sure after he is fairly on the road to recovery to undo in a day or week all he has gained in months. On the other hand, the patient of strong character has a great protection against relapses. He only needs to be reminded of dangers to avoid them. When told to lead a regular life, deprive himself of pleasures and avoid dissipations, he never murmurs or flinches, but accepts the situation gracefully and cheerfully. The result is he gets well easily and remains well. Character is such a determining factor that by its aid the desperate case may get well, while one with less determination in the incipient stage will not. Indeed, it may be said that it is only the patient of strong character who does get well when the disease is well advanced. It is not possible to do more for a patient than he will accept. The wisest advice will avail nothing if he is not sufficiently impressed with the importance of proper living to put into practical operation the advice given. No institution or system of treatment can supply deficiency of character in a patient who is weak or vaccillating. Temperament has also much to do with the success of treatment. The sanguine hopeful patient usually does better than one of a lymphatic or despondent temperament. A patient who doubts or looks upon the gloomy side of life, enters upon the treatment half-heartedly, rarely does well. He expects to do badly, and usually does as he expects. On the other hand, the patient of sanguine temperament is determined to get well; is pleased with each step in

his progress, aims high and strives hard to accomplish his purpose; therefore nearly always does well. Nothing is too hard for him. He is ever ready to make an extra effort when an emergency arises. He comes through the difficulties, if not completely victorious, at least without much damage. In making a prognosis in any case the character and temperament of the patient must be reckoned as important factors.

Home Treatment.—Another serious obstacle is the assumption that the treatment can be carried out successfully in the home. All the reasons usually adduced are so very plausible that any attempt to combat them by argument is useless. The facts of experience, however, are all against this method, and is the only reply that can be made when this phase of the subject is under discussion. Prof. Clifford Allbutt, in an address delivered at the British Congress on Tuberculosis, in contrasting the relative merits of the sanatorium and home treatment, said: "The method was worked out in a sanatorium created for the purpose. It has been tested and perfected in the sanatorium, and if it is ever carried on outside it can only be by bringing the skill and the conditions of the sanatorium into the home. I would look with little confidence on the home treatment of a phthisical patient by the physician unversed in the practice of a sanatorium. It is as it were to tell a boy at home to read his Cæsar, his Xenophon, a little Euclid and algebra, and pat him on the head, tell him to be good and industrious and promise to call in a week or ten days to see how he has gotten on." This is the whole matter in a nutshell. The youth who studies at home certainly has a better time than he who goes to school, and has constantly over him a competent instructor to teach him when, how and how much to study, hears his recitations, commends his successes and checks his mistakes, but in the end it is inevitable, except in rare instances of individual devotion, which youth best succeeds. To my mind this analogy is quite to the point. As for bringing sanatorium conditions into the home, that, of course, can be done, but it must be by converting the home into a sanatorium. A hospital with properly trained physicians and nurses with the appliances and equipment for all details of treatment and all possible contingencies, is to-day recognized as the only rational method of treating the vast majority of diseases. Properly equipped sanatoria should, for substantially the same reasons, be recognized as indispensable to the curative treatment of tuberculosis. Patients can be cured in their own homes, but even under the best and most favorable surroundings these cures are relatively few as compared with those effected in a sanatorium, and are apt to be but a temporary hemming-in with a wall of fibroid tissue of a few colonies of the invaders only waiting the first available opportunity to break down the cordon again and attack the tissues of their host. Moreover, sanatorium treatment is infinitely more economical because it takes much less time. It is not too much to say that as much improvement can be made in a week under sanatorium treatment as is usually possible in a month under the most careful treatment in private homes under the most favorable circumstances. The patient who undertakes to carry out the treatment

in his home is not only constantly exposed to the temptations to do things which he sees done by those in health, but does not get the support of his friends when convalescent, because they cannot realize that a tuberculous patient is not well simply because he looks well; hence is exposed to many temptations to which he almost inevitably yields. One important factor in the treatment which cannot be had in the home is the effect of the example of other patients and of the *esprit de corps* which is developed among them, both of which are powerful factors in sanatorium results. However intelligent and purposeful, determined and obedient the patient may be, he will lose much in not having the stimulus which is obtained from living with other patients who, like himself, are seeking to recover health, and whose example will constantly urge him on to the proper life. Those who have handled many patients together know the great assistance which is obtained from the rivalry between them in taking the cure faithfully; the brace to the weak of the example of others; the encouragement to the discouraged from the good results in other cases, and the mutual assistance of that spirit which animates them all. At a sanatorium the patient readily submits to the necessarily rigid discipline because everybody else does, while in the home he does not. At a sanatorium a patient is removed from all sources of excitement, and for these and many other reasons, trivial in themselves, but together of importance, a patient's chances of recovery are many times greater than in his own home.

These suggestions may strike many of you as superfluous and very commonplace, but if we do not take into account these important considerations our efforts are of little or no avail, and no one knows this better than the physician who has had an extended experience.

In conclusion permit me to add that it is a mistake to estimate the value of the sanatorium simply from the standpoint of the number of cases cured. This is too narrow a view. The ideal result, of course, is a cure, but this is not always possible. Where it is not, the result may be an arrest. This prolongs the life and usefulness of the individual months and sometimes years, and in many cases an ultimate cure is accomplished. Where this is not obtainable an improvement which prolongs life for a shorter period than does an arrest, and not a few even of this class of cases end in a cure. In any and every event the patient is removed as a source of infection and returned to his family with an education as to preventive measures which makes him harmless to his family and friends. Every conscientious patient goes forth from the sanatorium with a practical knowledge of tuberculosis and how to prevent its spread. It is unquestionably the most far-reaching and efficient means of attacking the tuberculosis menance, but there are many defective methods which must be corrected before its greatest possibilities will be attained. There is not a single obstacle, however, which cannot be more or less easily removed when we have a clearer understanding of the situation.

PREVENTION OF TUBERCULOSIS.*

CHARLES J. WHALEN, M.D., LL.B.
CHICAGO

Of all diseases common to man, consumption is the most wide spread and the most deadly. In Illinois, in 1908, over one death in every three between the ages of 20 and 30 was due to consumption, and over one death in every four between the ages of 30 and 40 was due to consumption. Every time the clock strikes the hour, some one in Illinois dies of consumption; one every hour; 24 every day; 750 every month, and 9,000 every year.

Autopsy statistics disclose a vast discrepancy between the great frequency of post-mortem evidence of tubercle infection and the rate of mortality attributable to the disease itself.

Naegeli has shown that the probabilities are that we are all tuberculous, and that the practitioner has only to decide whether tuberculosis is latent or progressing. The vast majority of observers place the estimate at from 60 to 70 per cent.

No discourse on prevention of tuberculosis would be complete without proper consideration of all its etiological factors. In its etiology, tuberculosis is a parasitic disease *par excellence*. The parasite is the bacillus tuberculosis discovered by Koch in 1882. Without its presence there is no tuberculosis; therefore, unless the organism enters the system in a living state, it is not dangerous. Tuberculosis can only be developed by constant heat at a temperature such as that of the animal body. The bacillus has an extraordinary capacity for adapting itself to the various tissues of the body. From the brain to the bones there is scarcely a part of the anatomy where it cannot get a footing. While the microbe is the incidental agent, multiple and varied elements enter into the causation of tuberculosis *per se*. Back of the bacillus are causes which are operating to produce malnutrition and lowered vitality.

The candidates for tuberculosis often show a distinct morphology of the body. There are two fairly distinct types which are especially liable to develop tuberculosis. The one in its most characteristic expression is the florid, sensitive person of nervous temperament with long, narrow, flat or cylindrical thorax, supraclavicular and infraclavicular spaces depressed, Louis' angle pronounced, the scapula-winged; feeble constitution, skin thin and transparent, superficial veins visible, delicately chiseled features, oval face, fair fine hair, large light lustrous eyes, eyelashes long and delicate with arched brows, small bones, slight graceful figure, tapering fingers with long almond-shaped nails. The stigmata of scrofula are often present and also muscular dystrophies.

The other type finds its most complete example in the sluggish, mentally inferior immigrant from southern Europe, with high cheek bones, irregular features, rough, thick skin, sallow complexion, large, ill-shaped

* Read in Symposium on Tuberculosis at Meeting of North Shore Branch, Chicago Medical Society, Nov. 2, 1909.

hands with clubbed finger tips and nails of marked convexity, coarse dark hair and thick, large bones. This class is not so well defined perhaps as in the former; both may appear to be somewhat fanciful, and there are, of course, many cases belonging to neither. The coincidence of a moderate number of these characteristics in one individual is sufficient ground for suspicion that he is a victim, directly or indirectly, of the bacillus of Koch or its toxins. Mariani mentions, in addition to the body changes, three signs which can aid us in recognizing the existence of an early stage of the disease at a time when it is possible to prevent its extension. 1. The general condition of a child who grows thin and pale without an appreciable cause and whose muscles become flaccid, and for which condition his growth or school does not give sufficient reason. 2. The presence of children of the micropoliadeny of Legroux. 3. The hypertrophy of the tonsils and the presence of adenoids in the nasopharynx of a tuberculous nature, as Dieulafoy has demonstrated, and which constitute very often the first stage of a cervical glandular tuberculosis destined to extend to the lungs.

The occupation of a patient may to some extent create a presumption in favor of the existence of tuberculosis. The disease is apt to develop in persons who follow sedentary pursuits amid insanitary surroundings or exposed to the inhalation of dust and unwholesome vapors. Printers, weavers, stone cutters, knife-grinders, metal workers, factory operatives, tailors, tobacco-strippers and packers, workers in wall-paper, dyers, painters and cigar-makers are occupations frequently noted as etiologic factors in tuberculosis.

Race does not appear to be a very important factor in the occurrence of tuberculosis, except that in a general way people coming from warm, equable climates to our variable one are apt to suffer. Mulatto negroes from the tropical West Indies, Italians from about Naples and Sicily, and Chinese coolies from the south of China, near Canton, are more apt to develop the disease than immigrants from northern Europe.

Heredity. The influence of heredity is still incontrovertible, although less potential than was held previous to Koch's startling discovery. Direct hereditary transmission of the tuberculous germ from parent to child is of exceedingly rare occurrence. A careful consideration of the subject of heredity in tuberculosis shows that the disease in infancy is indirectly due on the one hand to either a hereditary or acquired predisposition, and directly on the other hand to a postnatal infection, and that father or mother transmits to the offspring not tuberculosis *per se*, but a predisposition or less resisting power to the invasion of tubercle bacilli. In this connection the point of greatest practical importance is that the immigration and lodgment of bacilli are distinctly favored in a predisposed organism as compared with one that is perfectly normal, hence this hereditary influence when clearly present is not only of etiologic, but of diagnostic importance.

Since the discovery of the bacillus, much reliable data had been obtained as to the way in which the disease is disseminated. Nearly all authorities at the present time agree that the contagion is carried mainly

through the air, the same as in scarlet fever, measles, pertussis, chickenpox, variola, influenza, pneumonia of various kinds, diphtheria, epidemic cerebrospinal meningitis, acute poliomyelitis, acute articular rheumatism, arteriosclerosis, acute nephritis and pyogenic bacterial infections, all of which are now known to be air-borne infectious diseases.

How, then, does tuberculous infection enter the body? Does it enter by the skin? Probably never without a solution of continuity. Does the infection enter by way of the alimentary tract? No, except in very rare instances. Tuberculosis of an intestinal or gastric origin is seldom met with.

This brings us to the question that has been causing a great deal of discussion among physicians and laymen alike, and upon it hinges partly the eradication of the disease, namely: Is animal tuberculosis communicable to the human subject? As the result of pathologic investigations some doubt has been thrown on this plausible theory by various writers.

You will remember the intense interest that was excited by Koch, the discoverer of the tubercle bacillus, in his address at the London Congress for tuberculosis a few years ago. He there stated that bovine and human tuberculosis were due to absolutely different types of bacilli, and were not interchangeable, and that it was not necessary for man to protect himself from the tuberculosis of cattle.

Is man susceptible to bovine tuberculosis?

It is impossible to give the question a direct answer, for the reason that experimental investigation of it with human beings is out of the question. Indirectly, however, we can try to approach it. It is well known that the milk and butter consumed in our great cities very often contain large quantities of the bacilli of bovine tuberculosis in a living condition. The inhabitants of such cities consume daily such living and perfectly virulent bacilli of bovine tuberculosis and unintentionally carry out the experiment which we are not at liberty to make. If the bacilli of bovine tuberculosis were able to infect human beings, many cases of tuberculosis caused by the consumption of alimenta containing tubercle bacilli could not but occur among the inhabitants of great cities, especially the children.

That a case of tuberculosis has been caused by alimenta can be assumed with certainty only when the intestine suffers first; that is, when a so-called primary tuberculosis of the intestines is found. But such cases are extremely rare. Koch himself says among the great many cases of tuberculosis examined after death, I remember having seen primary tuberculosis of the intestine only twice. Among the great postmortem material of the Charité Hospital in Berlin, ten cases of primary tuberculosis of the intestine occurred in five years.

Behring takes the opposite view. He asserts that tuberculosis in man and cattle is propagated by identical bacilli and that the seeming differences between the human and bovine bacilli result from the capacity of the bacilli to accommodate themselves to the organisms in which they live. He also believes that the infant's diet of milk is the whole source of infection in tuberculosis. He also holds that the bovine tubercle bacillus

is more virulent for man than the human tubercle bacillus. This view, radically different from the opinion commonly held by sanitarians, coming from a man of Behring's weight and authority, compels us to at least investigate the proofs offered by each in support of his theory.

Theobald Smith says that there are some undoubted cases of bovine tuberculosis in children, among whom ingestion does play a more important part than in adults, but that there is at present no evidence that bovine bacilli may be transformed and assume the human type in the human body. De Schweinitz, U. S. Bureau of Animal Industry, has isolated nine cultures from human tuberculosis. By comparing these cultures with newly isolated virulent cultures of bovine tuberculosis, there were found among them two cultures from children which were identical in their cultural and morphologic characters with the bovine bacillus. Salmon has never accepted the existence of two distinct types; he believes that the differences are due to the host, and that both have a common origin.

The Royal Commission in England, in concluding its report, says: "We have very carefully compared the disease thus set up in the bovine animal by material of human origin with that set up in the bovine animal by material of bovine origin, and so far we have found each, in its broad general features and in its finer histologic details, to be identical with the other. We have so far failed to discover any character by which we can distinguish one from the other." The German Commission, and nearly all the French and German bacteriologists, believe that the existence of two types of bacilli is proven. The great majority of American pathologists, most of whom have done experimental work, agree that there are two types of tubercle bacilli, distinct in cultural characteristics, virulence and morphology. The Imperial Board of Health of Germany has given out for publication the report of the committee which has been studying under governmental auspices the relation between human and bovine tuberculosis. From one to two years of experiment and test failed to show any indication of transformation of either of these types into the other type, the attempts to inoculate cattle with human tuberculosis all resulting negatively.

Dr. Moore, in his experience with cattle tuberculosis, has never met with a case of its transmission to man. As regards the transmission of human tuberculosis to cattle, the case is equally strong. There is no instance that he can find where the infection of the disease in man has passed to the animal. He mentions the herd at the Saranac Lake Sanatorium, where there is so much infective material, and where the herd is exposed, if any could be, to infection, and yet it was found free from tuberculosis. Professor Adami presents a similar view and points out that human tubercle bacilli, when inoculated into cattle, tend to become localized, while fowls may be fed on bacilli contained in human sputa with impunity.

Spengler states that in all the cases where he has examined localized tuberculosis of adults and children in whom the disease was not suspected, it was clear to him that the origin was in the bronchial glands

and that the mesenteric and intestinal glands were not affected. In children who died of tuberculous meningitis, tuberculosis of the bronchial glands was never absent. Raw, as a result of an observation of 3,500 cases of tuberculosis, with, in addition, a study of 650 autopsies in such cases, expresses the opinion that human and bovine tuberculosis are separate and distinct varieties of disease and that the human body is susceptible to both.

Ganghofner, after studying the autopsies of 253 children who died of tuberculosis, states that the bacilli of bovine tuberculosis rarely gives rise to human tuberculosis by transmission in the feed. He compared the statistics of human tuberculosis in certain sections with the official data of bovine tuberculosis and tuberculosis of the udder. He found nowhere any parallel between the two diseases. Often human tuberculosis was rife where bovine tuberculosis was scarce and *vice versa*. Koch's claim that the human type will not infect cattle has been disproved by some observers; however, the infection of animals by human tuberculosis has rarely occurred in feeding experiments and has been successful in only a small number of instances after inoculation. Granting that pulmonary tuberculosis may be caused by ingestion as well as by inhalation of the bacilli, we should expect to find a difference in the rate of increase or decrease of tuberculosis of the lungs as compared with other forms of tuberculosis.

Thorn's table shows that in England and Wales, between the periods of 1851-1860 and 1891-1895, there was a reduction in the mortality of all ages from pulmonary tuberculosis of 45.4 per cent., while the mortality from tabes mesenterica under one year of age actually increased 27.7 per cent. for the period referred to.

In Massachusetts for the years first mentioned for the period under 5 years of age, the death rate from pulmonary tuberculosis was 46.3 to 1,000 deaths from all causes. For the two years last mentioned it was but 15.6 to 1,000 from all causes. In the two years first mentioned there were in the same age 70.7 deaths from other forms of tuberculosis to each 1,000 deaths from all causes, and in the two years last mentioned there were 96.2 from other forms of tuberculosis to each 1,000 deaths from all causes; thus, in 40 years there was an increase of 36 per cent. in the forms of tuberculosis other than phthisis in the class under 5 years of age; while there was a reduction of the mortality from phthisis of all ages of about 45 per cent.

In Michigan for the years from 1870 to 1884, inclusive, in the class under 5 years of age, there were for each 100 deaths from consumption 81.8 deaths from other forms of tuberculosis. From 1885 to 1897, inclusive, there were 104.3 deaths from other forms of tuberculosis for each 100 due to consumption. Why this tremendous increase in the mortality from other forms of tuberculosis as compared with consumption at what has been called the milk-drinking age?

Gottstein states that among children in Berlin the mortality of those at the breast is but slightly more than half as much from tuberculosis as among those otherwise nourished. Bovaird, Jr., discusses the experimental work done by American and European investigators and sums up

by saying that it appears that human tuberculosis can be transmitted to cattle, but with difficulty, and it seems highly improbable that such transmission plays any great part in the production of the disease among cattle. Bovine tuberculosis can be transmitted to man, but the evidence that such transmission occurs under ordinary circumstances is extremely scanty and it is highly improbable that such transmission plays an important part in the spread of the disease in man. An important feature in the research work done has been that relative to the infection of children through the intestines, and of this the author says: "It seems that we can still safely say that the greatest weight of evidence is against frequent infection of children through the intestines and that we cannot, therefore, consider that tuberculous milk is frequently the means of conveying the disease." Von Pirquet says of the numerous tubercle bacilli which are swallowed and which proceed through the intestinal canal very rarely one finds a chance to enter the mucosa capable of producing here a primary lesion. In practical pediatrics this route seems to play a very insignificant rôle.

If, as Behring says, the bovine tubercle bacillus is more virulent for man than the human tubercle bacillus, a more virulent disease must result from bovine than from human infection and, moreover, if practically all infections occur in nurslings from infected milk, then the greatest prevalence of tuberculosis should be in the years of infancy and early childhood. Tuberculosis, however, is rare in infancy, as the observations of Westenhoffer, Freebelius, Baginsky, Biedert, Lannalongue, Huebner, and all pediatrists show. Moreover, the mortality increases from birth until about the fifth year and then declines to the age of puberty, after which it again steadily increases. Epstein, in four years, did not find a single case of tuberculosis in the autopsy material of the foundlings' asylum at Prag, where the children were received directly from obstetric clinics without having been associated with tuberculous mothers.

Again, if Behring's proposition be correct that the bovine tubercle bacillus is the chief and practically the only source of infection, the mortality from tuberculosis of children nourished from cow's milk should at least far exceed that of the breast-fed infants; but this is not the case. In Berlin records have been kept of the method of feeding all children under one year who have died of tuberculosis, and the figures are cited by Fraenkel as follows:

In 1899 the total infantile deaths from all causes was 10,933; in 1900, 11,762; in 1901, 11,325; in 1902, 8,927. Of these there received mother's milk exclusively 898, 895, 832 and 733, respectively, of whom there died of tuberculosis in 1899, 11.1 per cent.; in 1900, 8.9 per cent.; in 1901, 4.5 per cent., and in 1908, 5.7 per cent. Of children reared exclusively on cow's milk there died in 1899, 6,631; 1900, 7,305; 1901, 6,983; 1902, 5,246, and, of these, death was due to tuberculosis, respectively, in 79.5 per cent., 70.9 per cent., 63.9 per cent. and 61.1 per cent. From these figures it will be seen that the maximum difference in any one year between the two series is represented by only 0.4 per cent., a fact which does not bear out Behring in his views.

Speck, in order to determine the degree of danger of tuberculous infection in infancy from milk, made inquiry of the various sanatoria for tuberculous patients in Germany concerning the method of feeding of patients up to the third month of life. It was shown that of 4,467 phthisical patients of the sanatoria 3,455 had been breast-fed, or 77 per cent., and 1,012 had received cow's milk, or 23 per cent. Of 259 cases reported by other physicians 181, or 70 per cent., were breast-fed. Jacob and Pannwitz reported 2,921 tuberculous patients; 1,877, or 67 per cent., were raised on cow's milk. Schroeder reports 264 cases; 203 were breast-fed, or 77 per cent., and 61, or 23 per cent., were fed with cow's milk. Servae reports 99 cases, of which 63 received women's milk, or 64 per cent., and 36 received cow's milk, or 36 per cent. These figures Speck has summed up, making a total of 8,010 cases of tuberculosis, of which 5,854, or 73 per cent., were breast-fed children and 2,156, or 27 per cent., received cow's milk. While these statistics represent conditions on the continent, the records of the Winyah Sanitarium at Asheville, N. C., show that 75 per cent. of tuberculous patients have positively stated that they have been breast-fed, 15 per cent. could not make positive statements, and 10 per cent. were raised on cow's milk.

Biedert shows another discrepancy between Behring's theories and the real facts—that in the lower Pfals district there are 182 head of cattle per 1,000 inhabitants, and, according to meat inspection, there are 7.5 per cent. of tuberculous cows. Here the mortality from tuberculosis is 35.9 per 10,000 inhabitants. In the upper Pfalz there are 314 head of cattle per 1,000 inhabitants and of tuberculous cows 17.3 per cent. Here the mortality from tuberculosis is 29.1 per 10,000.

Tenzig cites the statistics of the city abbatoir of Padua, which shows that bovine tuberculosis occurs with rarity. Yet this city furnishes the greatest mortality of all Italian cities from tuberculosis with a remarkable frequency of intestinal tuberculosis. Carter says that the average mortality from tuberculosis in the city of Havana represents more than 21 per cent. of the total death rate, and yet raw cow's milk is never used in Havana.

In Sweden, where for generations nearly all mothers have nursed their children, we find a higher death rate among children from tuberculosis than in certain other countries where artificial feeding is frequently resorted to. Hirsch cites the comparative statistics for four countries as follows: Switzerland, 1.86; Prussia, 2.94; Norway, 2.21; Sweden, 3.5. Babes states that tuberculosis is very prevalent in Roumania, where the children receive no cow's milk. Arthur Meyer says that in England, where milk is used raw much more than in Germany, the tuberculosis mortality is less than on the continent, although Ransome, Delepine, Boyce and others have shown that milk contained tubercle bacilli in large numbers of the samples which they examined. Dr. Vesta shows that in Sardinia and in Sicily, where bovine tuberculosis is almost unknown, tuberculosis in man causes a greater mortality than in England.

Stowell says that at the New York Infants' Hospital, which has 2,500 patients supplied with milk from 28 cows kept on the farm, between the years 1903 and 1907 there were 4,537 patients, of whom 180 died, 18 of

whom died from tuberculosis, a mortality of 10 per cent., which is the same mortality as for the nation, and yet these children have been fed on tuberculous milk, for in 1903 two diseased animals were found and killed. In October, 1907, it was found that out of 30 cattle only three failed to respond to the tuberculin test. Comby, before the International Congress of Tuberculosis in 1905, made the emphatic statement that, from his observation, milk played no appreciable part in the spread of tuberculosis in children.

Sterilized milk is almost universally used for infant feeding in Paris, and, while it has resulted in marked diminution in the death rate from intestinal diseases, yet the mortality from tuberculosis in children has increased. Holt found no cases of primary intestinal tuberculosis in 119 children dying from tuberculosis. Bovaird found two cases in 125 autopsies; Northrup, 3 in 125; Hand, 10 in 115 autopsies on tuberculous children. Baginsky, among 933 cases of tuberculosis in children at the Emperor Frederick's Hospital for Children never found tuberculosis of the intestine without simultaneous disease of the lungs and the bronchial glands. Biedert, in 3,104 post-mortem examinations of tuberculous children, observed only 16 with primary tuberculosis of the intestines.

I could cite from the literature of the subject many more statistics of the same kind, all undoubtedly showing that primary tuberculosis of the intestine, especially among children, is a comparatively rare disease, and in the few cases that have been enumerated it is by no means certain that they were due to infection by bovine tubercle bacilli. It is just as likely that they were caused by the widely-propagated bacilli of human tuberculosis, which may have got into the digestive canal in some way or other, for instance, by swallowing saliva from the mouth. Feeding experiments on animals have shown that after the ingestion of tuberculous material the nodes in the chest may be first attacked and bacilli have been found in the thoracic duct shortly after feeding.

Statistics show that in tuberculosis in children the greatest number of cases occur between the second and sixth year. If tuberculous milk is such a great source of danger, a greater number of cases would appear before the second year. Heyman tells us that in Greenland infants are almost exclusively breast-fed, and yet tuberculosis is so prevalent that it is easier to name those who are free from it than to attempt to report the wide-spread presence of this disease. Cobb shows us that tuberculosis in all its forms is the greatest scourge in China. Nevertheless, the use of milk as a food by the Chinese is so rare that one may practically say they do not use it. Very few cattle are raised by the Chinese and these are mostly used for ploughing.

Professor Asyama states that cow's milk is practically unknown in Japan and that the feeding of nurslings has been only by mother's milk or that of wet-nurses for ritual and religious reasons, yet tuberculosis has been widely disseminated in that country for centuries. The mortality from tuberculosis in Tokio is about one-fifth the total number of deaths from all causes, or twice the death rate from tuberculosis in cities of America.

In Hindustan the people, like the other oriental races, do not use milk to any great extent, yet tuberculosis prevails there as elsewhere. In the Philippines, milk is seldom used, and in Cuba and all the Spanish-American countries the milk is invariably boiled before using, yet we know they have tuberculosis. The Alaskan Indian has tuberculosis to a great and increasing extent, yet he does not use milk of any kind as an article of diet and cow's milk not at all. In the Islands of Jersey and Guernsey the cattle are free from tuberculosis, but the people of these islands do have tuberculosis just about as much as we should expect to find elsewhere under similar environments.

Though the important question whether man is susceptible to bovine tuberculosis at all is not yet absolutely decided, one is, nevertheless, at liberty to say that, if such a susceptibility really exists, the infection of human beings is but a very rare occurrence. I should estimate the extent of the infection by the milk and flesh of tuberculous cattle, and the butter made of their milk, as hardly greater than that of hereditary transmission.

Behring's theory of the milk infection of infancy and the latent tuberculosis of childhood has not many supporters outside his immediate following. It is certainly the feeling of most experimenters that bovine infection is rarely met with in the human subject, but that in the vast majority of instances infection takes place through the respiratory and not the alimentary canal. This view does not imply that intestinal infection with the tubercle bacillus may not lead to pulmonary tuberculosis. There is good evidence that it occasionally does, but there is a wide difference between the view that pulmonary tuberculosis is an occasional sequence of intestinal infection and the belief that it is commonly of intestinal origin.

I repeat now what I said in 1900 (*Medicine,* March), which was before Koch promulgated his theory of the non-transmissibility of bovine tuberculosis to man, and again in 1908 (*Chicago Medical Recorder,* August), namely: While infection from milk may be possible, I believe it to be extremely infrequent, and that the great wave now sweeping over the country which has for its object the destruction of all tubercular milk cows, with the idea that with their destruction tuberculosis in man will spontaneously disappear, is born of the grossest misapprehension of the real facts, and, however much we might desire the examination and condemnation of infected herds of cattle for economic reasons (for a sick cow is not a profitable commodity for the farmer), to demand their wholesale destruction with the idea of immediately exterminating human tuberculosis is certainly putting the cart before the horse, for the more serious source of danger of contracting the disease is left behind. Statistics show that the greatest danger is not from tuberculous milk and meat, but that the chief source of contamination is from ourselves.

Where, then, does this infection gain entrance to the body? It has been proved beyond a shadow of a doubt that the nasopharynx is the road of infection in the majority of air-borne diseases. Our belief in the invasion of the system by the tubercle bacilli through the bronchial route for a long time overshadowed all other theories, but more recent research

shows us that invasion through the lymph channels and blood current occupy a scarcely less conspicuous place at the present time as sources of infection in pulmonary tuberculosis. In the light of our present knowledge we must admit that in some cases at least the bacilli gain entrance into the system through the lymph channels, then to the bronchial lymph glands; from this point they are carried by the blood stream to the lungs, usually to the apex, because of comparative local anemic and retarded lymph flow, which is due to hindered movement from ossification of the rib.

A thorough digest of the research work done on lymphatic infection convinces me that the tonsillar tissue of the throat, because of its peculiar anatomic construction and its topographic relations, is more liable to become infected by tuberculosis than any other part of the upper respiratory tract. In a large percentage of pulmonary phthisis the faucial tonsils become inoculated. In 5 or 6 per cent. of hypertrophied pharyngeal tonsils some form of primary tuberculosis will be found. Tubercular adenitis in the cervical lymphatic develops in the majority of cases from infection originating sometimes in the faucial tonsils, but more frequently in the pharyngeal tonsil. The tubercle bacillus is probably unable to pass through the tonsil without having first overcome the vital resistance of the tonsillar tissue. This latter fact explains in a large degree the morphology of the child with the tuberculous habit. The line of defense against toxins is strong enough to prevent modification of the growth and development of the body.

If the second defenses of the tissue and glands are sufficiently resistant, the disturbances will proceed no further than an enfeebled constitution, which will increase in strength as the years go on. As the secondary defenses weaken by sclerosis of the glands, or through the loss in protecting power or through other agencies which are, like the above, largely problematical in character and functions, the constitutional resistance gradually breaks down and these functional disturbances of stomach, blood vessels, vasomotor centers and respiration make their appearance. And after a more or less prolonged period comes the explosion on the lungs, and we have the beginnings of a chronic and usually incurable pulmonary tuberculosis.

Sputum is the main source of infection. We have shown that in the majority of cases of tuberculosis the disease has its seat in the lungs. From this fact it is to be concluded that the germs of the disease in all likelihood get into the lungs by inhalation.

As to the question where the inhaled tubercle bacilli have come from, there is also no doubt. We know with certainty that they get into the air with the sputum of tuberculous patients. This sputum, especially in advanced stages of the disease, almost always contains tubercle bacilli, sometimes in incredible numbers. By coughing and even speaking it is flung into the air in little drops, that is, in a moist condition, and can at once infect persons who happen to be near the coughers. But it may also be pulverized when dried in the linen or on the floor, and get into the air in the form of dust.

In this manner a complete circle, a so-called *circulus vitiosus*, has been formed for the process of infection from the diseased lung which produces phlegm and pus-containing tubercle bacilli, to the formation of moist and dry particles (which, by virtue of their smallness, can keep floating a good while in the air), and finally to new infection, if particles penetrate with the air into a healthy lung and originate the disease anew. But the tubercle bacilli may get to other organs of the body in the same way and thus originate other forms of tuberculosis.

This being true, measures for the combating of tuberculosis must aim at prevention of the dangers arising from its diffusion. A patient afflicted with the disease should be carefully instructed as to the proper care of sputa, an appeal being made to his instinct of self-preservation by telling him that not only is there danger of infection to others, but that his own condition may be made worse by the inhalation of infective material. He should be specifically told to exercise care to avoid soiling his clothing and linen. Handkerchiefs are not proper receptacles for sputa. When away from home pieces of cloth, or, better, Japanese paper napkins, which are inexpensive, should be employed for this purpose. When soiled they are folded and inclosed in a stout envelop which, with contents, is burned as soon as convenient. At home the cuspidor should have a sufficiently large opening to avoid soiling the sides and should contain either plain water or a solution of a simple disinfectant. Patients should be cautioned against swallowing their sputa. This topic deserves especial consideration. Constipation (with intermittent diarrhea) is found in most cases of pulmonary tuberculosis. It has been shown that bacilli in the sputum may safely pass the impaired gastric secretions, travel the course of the small intestine and be found in the fecal accumulation in the colon and rectum; or that they may pass into the deeper structures or lymph or blood channels through an uninjured mucosa. Reabsorption of bacilli with the products of metabolism and decay in the intestinal tract is a patent addition to the primary infection by causing intestinal tuberculosis. One's first thought might be to consign all persons suffering from tuberculosis of the lungs, whose sputum contains tubercle bacilli, to suitable establishments. This, however, is not only absolutely impracticable, but also unnecessary. For a tuberculous patient is not necessarily a source of infection providing he takes care that his sputum is properly removed and rendered innocuous. This is certainly true of very many patients, especially in the first stages, and all of those who belong to the well-to-do classes and are able to procure the necessary nursing. But how is it with people of very small means? The whole family have to live in one or two small, ill-ventilated rooms. The patient is left without the nursing he needs, because the able-bodied members of their family must go to their work. How can the necessary cleanliness be secured under such circumstances? How is such a helpless patient to remove his sputum, so that it may do no harm? At night the whole family sleep crowded together in one small room. However cautious he may be, the sufferer scatters the morbid matter secreted by his diseased lungs every time he coughs, and his relatives close beside him must inhale

the poison. Thus whole families become infected. Often, under such circumstances, the infection is not restricted to a single family, but spreads in densely inhabited tenement houses to the neighbors, and then regular nests or foci of disease are formed. If we investigate these matters more thoroughly we find that it is not poverty *per se* that favors tuberculosis, but the bad domestic conditions under which the poor everywhere, but especially in great cities, have to live. For, as the German statistics show, tuberculosis is less frequent, even among the poor, when the population is not densely packed together, and may attain very great dimensions among a well-to-do population when the domestic conditions, especially as regards the bedrooms, are bad, as is the case, for instance, among the inhabitants of the North Sea coast. So it is the overcrowded dwellings of the poor that we have to regard as the real breeding places of tuberculosis; it is out of them that the disease always crops up anew, and it is to the abolition of these conditions that we must first and foremost direct our attention if we wish to attack the evil at its root and to wage war against it with effective weapons.

General sanitary measures, such as improved housing, increased air spaces, subdrainage and the corresponding diminution in the dampness of houses, reforms in large establishments, as schools, factories, barracks, prisons, better ventilation and greater cleanliness in shops; protection against dust in the dangerous trades are important preventive weapons. But the sanitary measure having the greatest influence on the spread of the disease is isolation.

Newsholm's report on the isolation of the tuberculous individuals in the advanced state shows the death rate in pulmonary tuberculosis has steadily declined in many countries and large cities since 1860. England shows a decline of 52 per cent.; Scotland, 42 per cent.; Massachusetts, 56 per cent.; Prussia, 38 per cent.; France and Paris show very little decline in the death rate from tuberculosis.

In England there have been for years many consumptive hospitals and the general hospitals have always received such patients; moreover, the number of patients dying from consumption in hospitals has continuously increased from 16 per cent. in 1840 to 30 per cent. from all causes in 1900. In 1899, 2,800 persons died of tuberculosis in the London hospitals. This same ratio holds good in Prussia, where 44 per cent. of all deaths from tuberculosis were in hospitals. In Europe generally more tuberculous patients go to the hospitals now than formerly and remain a longer time. In Paris, where there has been only a small reduction of mortality, the hospitals are crowded and the surgeons complain of the intrusion of tuberculous patients. Such patients remain only a short time, about 25 days, and this short isolation can have, therefore, but little effect on the general infection. The contention that institutional treatment and isolation of advanced cases aid municipal hygiene applies especially to those who are so situated on account of their social conditions as to give infections to others.

In America the rigorous exclusion of consumptives from general hospitals made necessary by the assignment of tuberculosis to the group of infectious and communicable diseases, and the inadequate provision made

for this numerous class in the few existing special institutions, have made the lot of the tuberculous poor in large urban populations, indeed, a hard one. He can still demand a place in the hospitals of Europe, but the doors are shut to him here.

This unkindness will certainly react upon us if we do not soon realize its dangers. We here fear the tuberculous individual, but we do not sufficiently fear the condition of tuberculosis. Every county in this state has provision for the sick poor, but very few of them have made adequate provision for the tuberculous poor. If, as Newsholm has shown in his presentation of the cases, the rate of mortality has declined in so far as a nation has extended its institutional treatment of tuberculosis, the lesson is plain. Almost any infirmary can provide a ward or rooms for the consumptive; such wards should, however, be made attractive because the residence is long there and the prolonged waiting is a sad one.

Notification.—In the combating of all infectious diseases, notification has proved indispensable as a means of obtaining certain knowledge as to their state, especially their dissemination, their increase and decrease. In the conflict with tuberculosis also we cannot dispense with obligatory notification; we need not only to inform ourselves as to the dissemination of this disease, but mainly in order to learn where help and instruction can be given, and especially where the disinfection which is so urgently necessary when consumptives die or change their residences has to be effected.

Disinfection is another measure closely connected with notification, which must be effected when consumptives die or change their residence, in order that those who next occupy the infected dwelling may be protected against infection. Moreover, not only the dwellings, but also the infected beds and clothes of consumptives ought to be disinfected. Louis Pasteur said: "It is within the power of man to cause all parasitic disease to disappear from the world." These words have to no disease a juster application than to tuberculosis. Every intelligent person can soon learn to avert consumption. The houseling hemmed in with heater, gas stoves, coal-oil stoves, growing thinner and coughing constantly, drifts into tuberculosis and dies prematurely.

Live as much as possible in fresh air. If not out of doors, then put the fresh air indoors continuously by open windows. Live where the air is not full of poison from smoke stacks, locomotive gases and housetop chimneys. Avoid shut-up sleeping rooms. Avoid the decay exhaled into crowded air. Abstain from all crowded places where the rebreathed air from promiscuous lungs in large numbers is the only quality of breath drawn into the lungs.

Let me conclude this too lengthy paper by saying that if we are guided in our fight on tuberculosis by the spirit of genuine preventive medical science and utilize the experience gained in conflict with other pestilences and strike the evil at its root then the battle against tuberculosis cannot fail to be successful.

CONCERNING TUBERCLE BACILLI IN THE CIRCULATING BLOOD.*

FREDERICK TICE, M.D.
CHICAGO.

The comparatively recent announcements of Rosenberger[1] that tuberculosis is primarily and essentially a bacteriemia, when viewed from our present knowledge of the disease, appears quite revolutionary. That the bacilli may occur in the blood under certain conditions is a well-established fact, but that it is the rule can hardly be accepted without the most convincing proof. If the findings be definitely established, the discovery will be of far-reaching importance in the etiology, diagnosis and treatment. While accepting the announcements with much skepticism, the possibility of tuberculosis being a bacteriemia must be admitted, for in other diseases the impossibilities of yesterday have become the realities of to-day. Recent investigations demonstrate the importance and probable frequency of infection by means of the gastrointestinal route with or without evident injury to the intestinal wall; the bacilli being carried by the lymphatics to the thoracic duct, then to the subclavian vein and finally distributed broadcast by the blood to the various organs. The acceptance of either hypothesis, the importance of the gastrointestinal route of infection or the presence of the bacilli in the circulating blood, is corroborative evidence of the other.

One of the greatest practical advantages presented by the supposed detection of the tubercle bacilli in the blood is the possibility of an early diagnosis, for Rosenberger not only found bacilli constantly in various clinical forms of tuberculosis, but also in persons apparently healthy without symptoms or signs of local or general involvement, where there is, presumably, a non-virulent form of the organism or a latency, which later, with conditions favorable, may become active. This would seem to supply the demand for a means of early diagnosis not only in the most incipient cases, but even antedating any active infection, the fulfillment of hopes we dare not even dream. In reference to the treatment, instead of a local infection and a general toxemia, as generally accepted, therapeutic measures must be directed against a general infection, which may modify some of our present methods, especially the employment of injections of dead or living bacilli.

While Rosenberger's claim was generally received with considerable reservation, by some it was accepted and by one enthusiast was declared "the most important and far-reaching discovery as to tuberculosis since Koch's own discovery of the bacillus twenty-seven years ago." After a personal examination of a number of preparations in the Rosenberger laboratory, a feeling of pronounced skepticism was replaced by one of enthusiasm, and, being impressed with the possibility of making an early, positive diagnosis, it was decided to investigate the proposed method.

* Read at the North Shore Branch, Chicago Medical Society, Nov. 2, 1909.

The technic employed was that as first described by Rosenberger, which consists in withdrawing 5 c.c. of blood from one of the veins of the arm and thoroughly mixing it with an equal amount of a 2 per cent. sodium citrate in normal salt solution. This is then placed in the refrigerator for 24 hours and allowed to sediment. Thick smears are then made, allowed to dry in the open air, laked in distilled water, fixed and stained in the usual manner. More recently Rosenberger has modified the technic by making the smears direct from the blood, obviating the use of the citrated solution.

The cases selected for examination, eighteen in number, were all pulmonary phthisis, far advanced, with physical signs and tubercle bacilli in the sputum. All the cases died within a few days of the examination, such being selected as it was considered more probable that bacilli might be found in the circulating blood. Then, too, it was deemed advisable to begin with unquestionable conditions and later undertake the less advanced and incipient forms.

At least two and in most instances four smears were carefully examined in each case, but without detecting acid-fast bacilli in a single preparation. Becoming somewhat discouraged, upon request for a 'typical stained specimen," Rosenberger very kindly sent one prepared from a case of "cervical adenitis," presumably tuberculous. Careful and prolonged search, however, fails to reveal the presence of acid-fast bacilli. Since Rosenberger's announcement, several other reports on the investigation of bacilli in the blood have appeared, a review of which at this time will be of interest and of assistance (see table).

According to the tabulated reports, five record having found acid-fast bacilli in the blood, in some if not all, of the cases clinically diagnosed tuberculosis. Rosenberger unhesitatingly pronounces them tubercle bacilli; Forsyth, Petty and Mendenhall believe they are tubercle bacilli, as they resemble such "morphologically and tinctorially," while Burnham and Lyons, Brem and Dalley do not consider them as such.

In attempting to harmonize these findings and in arriving at some definite conclusions, there are several possibilities to consider. Among these:

1. The determination of the presence and nature of the acid-fast bacilli.

2. The possibility of the bacilli being attenuated forms of the tubercle bacillus.

3. Contamination with some form of an acid-fast bacillus.

4. Artefacts.

That the acid-fast bacilli were found by various investigators cannot be doubted, but that does not imply they were tubercle bacilli. Rosenberger's announcement that he had demonstrated tubercle bacilli in the blood was not new or surprising, but that he found them in all cases of tuberculosis, even in the apparently healthy, was certainly most startling, when viewed from the result of previous similar work.

Weichselbaum, in 1884, demonstrated many tubercle bacilli in the clotted blood from the great vessels in 3 cases of acute general tuberculosis. In the same year Meisils and Lustig found bacilli *intra vitam* in blood removed from a finger tip, and as a result Meisils recommended aspiration of the spleen as an aid in diagnosis. Later Rutimeyer succeeded in one of ten cases in which he aspirated the spleen. Sticker also found a few bacilli in blood removed from the tip of one of the fingers. Liebman claimed to have demonstrated the bacilli in 56 out of 141 blood specimens after the administration of tuberculin.

	Author.	No of. Cases.	Diagnosis.	Results, Positive+ Negative—	Remarks.
1.	Rosenberger[1]	312	Tuberculosis, various forms.	312+	Cultures not made—50 guinea-pigs inoculated; one died in a month with miliary tuberculosis both lungs; three more died within two months, two had tuberculosis; four others showed a few tubercles in the lungs and liver; thirty others were neg. on examination but showed acid-fast bacilli in the blood.
		112	Non-tubercular.	6+	
2.	Forsyth[2]	12	Pul. tuberculosis.	12+	Ten distinct signs and bacilli in sputum.
3.	Bernstein and Fried[3].....	10	Pul. phthisis.	10—	Tubercle bacilli in sputum.
4.	Ravenel and Smith[4].....	18	Tuberculosis.	18—	
5.	Burnham and Lyons[5]....	10	Pul. tuberculosis.	10—	Tubercle bacilli in sputum; 3 guinea-pigs inoculated—all neg.
6.	Petty and Mendenhall[6]...	10	Tuberculosis.	8+ 2—	
7.	Brem[7]	26	Tuberculosis.	26+	Five guinea-pigs inoculated—all neg.
		4	Non-tuberculous.	4—	
8.	Dalley[8]	17	Tuberculosis, 15 advanced, 2 miliary.	17+	Seventeen guinea pigs inoculated—all neg.
9.	Schroeder and Cotton[9] ...	42 Tuberculous cows.		42—	One hundred and four guinea-pigs inoculated—all neg.
10.	Taussig[10]	6	Pul. phthisis.	6—	Four cases with pulmonary phthisis had tubercle bacilli in sputum; fifth case later developed miliary tuberculosis, confirmed by autopsy; sixth case had tubercular peritonitis and sputum positive. Six guinea-pigs inoculated—all negative.
11.	Hewat and Sutherland[11]..	22	Pul. phthisis.	22—	Twenty cases had bacilli in sputum.

Ewing, commenting on the subject, says: "Grave doubt was, however, thrown on all previous work in this field by the negative results obtained by Guttman and by Kossel, who called attention to the danger of contamination in such specimens. This method of diagnosis has not been followed in later years. Although Kronig, in 1894, recommended the staining of centrifugated laked blood in doubtful cases of miliary tuberculosis."

1. Amer. Jour. Med. Sc., February, 1909; New York Med. Jour., June 19, 1909.
2. British Med. Jour., April 24, 1909.
3. New York Med. Jour., May 29, 1909.
4. Wisconsin State Med. Soc., June 30-July 2, 1909; Jour. A. M. A., Aug. 21, 1909, liii, 649.
5. Louisiana State Med. Soc., May 4-6; New Orleans Med. and Surg. Jour., October, 1909.
6. Jour. A. M. A., Sept. 11, 1909, liii, 867.
7. Jour. A. M. A., Sept. 18, 1909, liii, 909.
8. Boston Med. and Surg. Jour., Sept. 2, 1909.
9. Arch. Int. Med., Aug. 15, 1909.
10. Interstate Med. Jour., St. Louis, October, 1909.
11. British Med. Jour., Oct. 16, 1909.

Cornet makes the following statement: "Besides all this, it is pure speculation to assume that bacilli frequently circulate in the blood of phthisical subjects; for the actual finding of bacilli in the blood has never been demonstrated beyond the possibility of a doubt, except in acute miliary tuberculosis, and exceptionally during the last moments of life in phthisical patients; and in the latter instance their findings indicated not a harmless circulation, but rather the precursor and immediate cause of death."

While some of the investigators report negative findings, even in positive cases, the most striking feature consists in the uniformly negative results in the inoculation experiments. As tubercle-like bacilli, from one source or another, may occur in the blood examinations, the final crucial test must consist in animal inoculations.

Burnham and Lyons, at the Louisiana State Meeting, May 4 to 6, 1909, read a paper entitled "Experiences in the Staining of Bacteria in Fresh Blood," which was published in the *New Orleans Medical and Surgical Journal* of October, 1909. They report negative results, the first to discredit Rosenberger's work, in 10 cases of pulmonary tuberculosis, with also similar results in the inoculation of three guinea-pigs. To them is due the credit of detecting vibrios in the water, a possible means of error.

Brem, in *The Journal A. M. A.*, Sept. 18, 1909, publishes his findings in 26 cases of tuberculosis, in which the blood examinations were all positive, but inoculations in 5 guinea-pigs were negative. Blood from the guinea-pigs was examined prior to the inoculations, all being positive, but soon after inoculation with citrated blood from patients with suspected tuberculosis one was killed and failed to show tuberculosis; blood from the heart, however, contained acid-fast bacilli. Some months later two more were killed and examined with negative results; while the other two remained healthy.

Brem's experience led him to doubt the validity of the blood examinations, and on Nov. 14, 1908, by using egg albumin as a means of fixing, he was able to detect numerous acid-fast bacilli in the distilled water used. Much credit is due him for detecting, if not the error, certainly one of the chief sources of error in the proposed method and having again directed attention to the existence of acid- and alcohol-fast bacilli other than tubercle bacilli.

James, in an editorial note to the translated work of Cornet, refers to the subject as follows: "The term pseudotubercle bacilli is now generally applied to those micro-organisms which resemble the bacillus only in form and in their failure to be decolorized by acids. They differ from it in their relation to temperature, being less sensitive to this factor, in the fact that their growth is much more rapid, and especially in their feeble pathogenicity. Researches of the past three years have proved that they are more widely diffused than had been supposed. They occur for the most part outside the body, and, though many of them are experimentally pathogenic, but few have been found to be the causative agents of disease. Moeller found them in feces, Benenuti in gangrene of the

lung. Hoelscher inoculated into animals the acid-resisting butter bacillus of Rabinowitsch and Moeller, and found that in pure culture it had some virulence, but did not produce a condition identical with tuberculosis. Kayserling found them in hay, especially timothy, and in seeds; also in cultivated earth and in the products of herbivorous animals, as milk and butter. Moeller found them in human sputum, where they may easily cause errors in diagnosis. He advises the following method of differentiation: Mix the suspicious secretions with sterile bouillon, keep it at 30° C., and if a rapid growth occurs, that is, in two or three days, it is the pseudotubercle bacillus. Lichtenstein has found this organism several times in human sputum, in cases of gangrene of the lung and in catarrhal bronchitis. He believes that it occasionally causes an incorrect diagnosis of phthisis. R. Koch compared the two bacilli with reference to their agglutinations. He took the serum of animals treated by attenuated cultures of tubercle bacillus for purposes of immunity, and found that it agglutinated not only the tubercle bacillus, but the pseudotubercle bacillus; that is, the bacillus of bird and of fish tuberculosis, the Arloing Courmont bacillus, the butter bacillus, and the hay bacillus of Moeller. The reverse of this he also found to hold good; that is, serum from animals immunized from the pseudobacillus agglutinated the true tubercle bacilius. Herr finds the pseudobacillus very widely distributed in earth, cow dung, hay, etc., and concludes that they originate in the earth.

In general, it may be said that the pseudotubercle bacilli are coming to occupy a more and more prominent position in bacteriology, that they may cause errors in diagnosis, and that their recognition is not at all easy. There are cases in which a positive conclusion can be arrived at only after inoculation of the suspected matter into animals. There is an interesting similarity between the pseudotubercle bacillus and those cultures of the true tubercle bacillus that have been attenuated by propagation on artificial media for many years through many generations, a similarity in their morphology and in their feeble pathogenicity, and this similarity is emphasized by the results of Koch's experiments upon their agglutinating properties as above quoted.

Birt and Leishman have recently added another to the list of acid-resisting bacilli, having isolated it from a case of chronic bronchopneumonia. The list now numbers nearly thirty. Abbott and Gildersleeve, and Klemperer, conclude that a close relationship exists between these and the tubercle bacillus. The latter believes that their differences in virulence and in morphology are not fundamental, but have resulted through adaptation to various environments; he believes that the tubercle bacillus may be considered an acid-proof saprophyte that has subsequently become a parasite.

After reading Brem's report, egg albumin smears alone and with sediment from the distilled water, all gave negative findings. Two specimens of distilled water were left exposed to the air of the laboratory for some four or five days and were then examined, but found negative. That the distilled water examinations were negative is not surprising, in view of

the negative blood finding in the cases of tuberculosis. Seven guinea-pigs were injected with blood from a like number of patients with far-advanced tuberculosis with bacilli in the sputum. In each instance 4 c.c. of blood were used, but without producing any result, as the pigs remained healthy and presented no evidence of disease. The same field has been covered by others.

A review of the work up to the present tends to the following conclusions:

1. That tuberculosis as a bacteriemia is not in accord with our present knowledge of the disease.

2. The observations of Rosenberger are not confirmed by previous and subsequent workers.

3. Even his own work and findings are open to serious criticism, as he fails to control his findings.

4. It must be remembered that pseudotubercle bacilli may be present and cause errors in diagnosis. That this may occur is quite probable not only in the blood smears, but also in the ordinary sputum examinations.

5. The crucial test for tubercle bacilli in the blood, as well as differentiating between the true and pseudo forms, consists of inoculation experiments.

6. The method as suggested by Rosenberger as a means of early diagnosis in tuberculosis is practically valueless.

TUBERCULIN THERAPY IN PULMONARY TUBERCULOSIS.*

CLARENCE W. LEIGH, M.D.
Professor of Phthisiotherapy, Illinois Postgraduate Medical School
CHICAGO.

The following is intended as a brief résumé of the important principles governing the therapeutic use of tuberculin in pulmonary tuberculosis according to the method advocated and practiced by Trudeau and Denys.

It differs from that employed by Wright, inasmuch as immunity to tuberculin is sought by subjecting the patient systematically to increasing doses, while the latter (Wright) is governed entirely by the tuberculo-opsonic index in estimating the size and frequency of the dose, and makes no attempt to accustom the patient either to increasing quantities or to the production of tuberculin immunity. He seeks to maintain as high a degree of phagocytosis as possible, without producing subjective symptoms, and the dose may be the same, less, or more, depending upon the index findings. However valuable the tuberculo-opsonic index may be as a guide to dosage in surgical cases, it is unreliable in pulmonary tuberculosis, if for no other reason than that we are unable to control autoinoculation.

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* Read in a Symposium on Tuberculosis, at the Meeting of the North Shore Branch of the Chicago Medical Society, Nov. 2, 1909.

Tuberculin is an active, artificial immunizing agent, relative in degree only, and is distinguished from the passive form in that it is not an antitoxin, and when administered causes a specific reaction of the body cells, stimulating them to elaborate their own protective substances represented by antibodies, etc. However, it is not the purpose of this paper to discuss the mechanism of immunity as applied to tuberculosis. Suffice it to say that tuberculin immunity is not necessarily an immunity to the disease.

At the outset it must be remembered and emphasized that the treatment of all forms of tuberculosis, especially pulmonary, by tuberculin, must invariably be attended with extreme caution and a high regard for certain definite rules governing its administration, and that failure to observe them may result in disaster. Severe reactions, either constitutional or local, lessen not only the patient's prospects for recovery, but may easily convert a chronic into an acute type of the disease or possibly endanger the life of the patient.

In order to avoid these evils and secure the best results, the following cardinal points must be observed:

1. The initial dose must be infinitesimal (O. T. 1-1000 mg., B. F. 1-1000 mg., T. R. 1-10000 mg., B. E. 1-10000 mg.). 2. Increase in the size of the dose must be gradual. 3. Doses must be properly spaced. 4. Never inject again until all the constitutional and local signs and symptoms have been absent for two or three days at least. 5. Never increase a dose after a reaction. 6. All constitutional disturbances *without elevation of temperature* must be regarded as exceedingly important and an indication to discontinue treatment for a time.

The first dose should be small enough to preclude any possibility of a reaction. Too large an initial dose, or, for that matter, too large a dose at any time during the course of treatment, may result in intolerance. If marked reactions occur early, it is very difficult to habituate the patient to increasing doses. Later in the treatment a certain degree of immunity is obtained and reactions are not likely to be as strong or continue so long.

Symptoms of intolerance are manifested by:

1. General fever reaction, either short or prolonged:

The short is the same as that produced by a subcutaneous diagnostic dose and is characterized by the usual fall and subsequent rise of temperature, all occurring and ending in forty-eight hours.

In the prolonged reaction there is less constitutional disturbance; the onset is more gradual; the temperature is not so high, possibly not exceeding one degree, but continues above the usual range, except in the morning, for several days or possibly a week.

2. Local reaction at site of lesion, shown by an aggravation of physical signs, cough, expectoration, hoarseness, pain and aphonia if the lesion involves the larynx.

3. Local reaction at site of injection, indicated by pain, redness, swelling, and sometimes pain and swelling of neighboring lymphatic glands. Local soreness and hardness is not always indicative of reaction, but may be due to trauma caused by injecting.

4. Constitutional disturbances with *no elevation of temperature,* such as headache, anorexia, nausea, exhaustion, sleeplessness, wandering pains, loss of weight, gastric and intestinal disturbances. These symptoms are of great importance and are frequently disregarded.

The presence of one or more of these, or other unusual symptoms or signs, either alone or collectively, in one or all of the groups, should be regarded not only as sufficient, but imperative reason, for omitting two or three or more injections, or waiting until all unfavorable symptoms have been absent for two or three days. Treatment may then be resumed with greatly reduced doses. When a marked febrile reaction occurs, omit injections for a time, and when beginning again the dose must be reduced at least one-half. In fact the slightest departure from the usual condition of the patient is sufficient reason for reducing the dose or omitting one or more treatments or both.

Tuberculin intolerance and tuberculin hypersusceptibility are not synonymous terms. Hypersusceptibility really means increasing susceptibility to decreasing doses. For example, a febrile reaction may occur as a result of a given dose, and, after waiting two or three days, or until all symptoms have disappeared, one-half the dose that produced the reaction is administered, and is likewise followed by a strong fever reaction. Again, after waiting until all symptoms have been absent for two or three days, another injection, one-half the strength of the last, is given and is also followed by a strong reaction, possibly stronger than that produced by either of the two higher doses, and so on with each succeeding decreasing dose if further treatment is attempted. In these cases abandon treatment for two or three weeks and then resume with a dose very much smaller than the one that produced the last reaction. Brown states: "The greatest care in increase should be exercised in giving tenths of a milligram of O. T. or hundredths or tenths of a milligram of B. E. or B.F., as reaction most frequently occurs during these doses. Once past this point without reactions, they are much less likely to occur."

The length of time over which tuberculin treatment is continued is an important factor. Little or no benefit can be expected from a short course. The best results are obtained by extending it over a period of nine months or a year. When the patient is exceedingly tolerant, six months should be regarded as the shortest possible time in which to reach maximum doses. It is necessary to individualize in this, as well as in any other treatment, and the maximum dose for one person may not be the maximum dose for another. The more tolerance a patient exhibits, the better the prognosis. If the patient progresses favorably, the injections ought not to be given oftener than twice a week, and when doses of 10 mg. are approached every five days is often enough. When higher doses are reached, six days, and from one to two weeks for terminal doses. In patients who manifest a considerable degree of sensitiveness to tuberculin, 10 mg. should be the maximum dose and not be repeated oftener than every 12 to 14 days.

Final doses vary greatly in different individuals, depending altogether on tolerance. Those who are sensitive to tuberculin and who reach comparatively small doses sometimes improve equally as well as those who

tolerate larger ones. It is believed now by Trudeau that large final doses are unnecessary, and by others that immunity can best be established and in less time by several courses with smaller doses than are usually suggested. However, tolerance in any event should be the guide to dosage at all times. The choice of tuberculin is not so much a matter of importance as the method of administration; i. e., strict attention to dosage, proper spacing, etc.

O. T. is a tubercle toxin, and Koch claims it produces immunity to toxin only, and not to germ, and for that reason he later produced T. R. and B. E. B. E., he states, imparts greater agglutinating power to the blood. Theoretically, it would seem either of these should be preferred to O. T., especially in febrile cases. It is claimed they are less toxic and therefore not so liable to cause reactions, and that a more solid and lasting immunity is established. The interval between doses, however, should be longer when using T. R. and B. E. B. E. in large doses sometimes causes sterile abscesses, and both T. R. and B. E. cause more local reaction at the site of injection and occasionally unexpected general reactions.

At the last International Tuberculosis Congress at Washington, D. C., briefly stated, Detre claimed that O. T. does not contain a tubercle toxin present in B. F.; that patients are extremely sensitive to B. F., varying according to the stage of the disease, and that one can determine whether the infection is bovine or human. According to a modified von Pirquet method, he applies to the skin at the same time concentrated O. T., B. F. of a culture of human tubercle bacilli, and B. F. of a bovine culture.

He divides his cases into sensitive and non-sensitive. If sensitive, whether to human or bovine filtrate. Sensitive cases are oftener found in the early stages of the disease, but are also frequently seen in older cases, especially surgical. He designates the reaction "dominant," over whichever scarification the most sensitiveness is shown; "concomitant" the one which shows no reaction. It is said the reaction also determines whether the infection is of human or bovine origin. One of the greatest advantages he attaches to the reaction is that it indicates the tuberculin which should be selected for purpose of treatment. He states that it is very difficult to immunize with the "dominant" filtrate and that the "concomitant" should always be selected for this purpose.

Gabrilowitsch, at the same session, called attention to his tuberculinum purum or "endotin," which he assures us possesses in a full measure the active principles of Koch's O. T. minus the toxic properties which cause general reaction and can be used in large and increasing doses. In cases with circumscribed pulmonary lesions from 16 to 20 injections were found necessary, and those in which larger areas of lung were involved from 50 to 60 injections. Other advantages claimed for it are that it can be used in acute or subacute cases; is not contraindicated in the presence of complications in other organs than the lungs; lowers temperature, and febrile reactions are extremely rare; the pulse is almost never accelerated, and respiration is not affected. It does not cause pain in joints, nausea or vomiting, sleeplessness, malaise, etc. Two-thirds of all cases treated with "endotin" belonged to the severe types of cases, and only 12 per cent.

could be classed as mild cases. The tubercle bacilli disappeared from the expectoration in 59 per cent. of the cases treated; diminished considerably in number in 31. Catarrhal symptoms disappeared in 75 and were lessened in 25. The temperature became normal during treatment in 31 and at the end of the treatment in 62 per cent. The number of injections was 20 in 80 per cent. of the cases. The duration of treatment was from 40 to 60 days. The initial dose was almost uniformly 0.01 mg., while the terminal dose was from 100 to 120 mg.

The writer's experience with this tuberculin does not entirely confirm the claims made for it, besides they are not in accord with present conceptions of tuberculin therapy, inasmuch as the period of time over which the treatment is continued is not sufficiently long.

Originally Koch advised that tuberculin should be used only in cases where the temperature was normal or at least did not exceed 99 degrees. Denys and others now use it in acute cases and claim excellent results in some instances. However, it is best adapted to the treatment of all chronic forms of the disease where the general condition is good and where there are no contraindications or complications. If 100 degrees is the habitual minimum temperature, and there are profound nutritional disturbances, little benefit can be expected. If, however, all other symptoms are favorable, the degree of temperature is probably not so important a factor in contraindicating its use.

It is best to give the injections, if possible, late in the afternoon, as at that time one can observe the maximum degree and accompanying symptoms. Due allowance must be made for premenstrual and post-prandial temperature and that due to exercise, etc. Improvement from tuberculin treatment is noted by a gradual slowing of the pulse and lowering of temperature. The morning remissions are not so pronounced. Slight variations, however, may occur following injections; i. e., a day or two after, and are incident to the negative and positive phases. Eventually the temperature becomes normal. The appetite increases; there is better digestion and assimilation, permitting forced feeding, if it is thought advisable, and improvement in all pulmonary symptoms. The patient gains in weight or at least ceases to lose. If, on the contrary, there is a gradual rise in temperature and increase in pulse rate, accompanied by aggravated pulmonary symptoms, exhaustion, loss of weight, etc., treatment should be abandoned for a time, if not permanently.

In this connection it might be well to remark that Wright observes "the normal weight curve for patients with tuberculosis rises, as a rule, from August to December, fluctuates from December to March and then falls to August." This should be considered in estimating gains or losses in weight when administering tuberculin. It is said, although the rule is not absolute in all instances, that tuberculin is not indicated in patients suffering from true nephritis, recent hemorrhages, those recovering from acute diseases, meningitis, diabetes, cirrhosis of the liver and cardiac complications. Brown states that only three of his patients out of over 200 treated with tuberculin developed nephritis, but does not indicate which

preparation he used. He quotes L. Spengler as believing T. R. is to be preferred and has observed no renal complications from its use, but that after O. T. 8 per cent. of his patients had albuminuria.

Strict attention must be exercised in the management of patients in all other respects. For those who exhibit much afternoon and evening temperature great benefit will result from absolute rest and avoidance of all forms of excitement. It is necessary to regulate the diet according to individual requirements. Forced feeding in this class of cases is not advisable, and, if persisted in, will result in gastric and intestinal disturbances, accompanied by headache, malaise, aggravation of temperature conditions and other symptoms. On the contrary, when the temperature shows a tendency to a lower range, and eventually approaches approximately the normal standard, forced feeding may be advisable. Under these circumstances the bowels must be made to act rather freely, and it is often necessary to administer daily a mild laxative. Out-of-door life, cheerful environment, hygienic and sanitary conditions should be maintained, if possible, and are very important factors contributing to the welfare and recovery of these unfortunates.

Finally, it can be safely asserted that it is the consensus of opinion of the most intelligent and scientific observers that, while tuberculin is a potent agent for evil, if improperly used, and that neither the remedy nor the method is ideal and results are oftentimes disappointing, yet, if properly administered in selected cases, there can be no doubt of its positive value.

ON THE SPECIFIC TREATMENT OF PULMONARY TUBERCULOSIS.*

KARL VON RUCK, M.D., AND SILVIO VON RUCK, M.D.
ASHEVILLE, N. C.

The authors show that specific medication offers a far better possibility of treating pulmonary tuberculosis successfully in suitable cases, and of assuring permanent results than by the hygenic and dietetic methods alone.

Prior to 1901, when Koch showed an increase in the agglutinating power of the serum of patients treated with emulsion of tubercle bacilli, the proof of the value of specific treatment was only clinical. The authors confirmed the findings of Koch the following year. The further development of studies of immunity in tuberculosis has led to the demonstration of other specific immune bodies; that of specific amboceptor by the adaptation of Wassermann's method by Bordet and Gengou, that of the opsonic index by the method of Wright, and these methods have afforded valuable means of further confirming clinical results.

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* Read at the Meeting of the Chicago Medical Society, Nov. 3, 1909.

The authors have verified all these methods in their laboratory, but the clinical results which have been shown to be better and more permanent than was possible in cases treated exclusively by general methods, have, in the great majority of instances, been obtained without using any of the laboratory methods as a guide for treatment, with the exception of the agglutinin test which has been made as a routine measure for several years.

It is apparent from the authors' studies, as well as from those of various observers, that specific agglutinins are absent, or are present in only small amounts in the beginning of the disease; they are always present and usually in greater amount when the disease has become more evident, but still not far enough advanced to have seriously impaired the general nutrition. That the unaided development of antibodies rarely reaches a degree sufficient for an actual and lasting recovery is attested by the more or less rapid progress of the disease and by the frequency of relapses after improvement or apparent cure.

In 567 cases treated in the Winyah Sanitarium with watery extract of tubercle bacilli, the agglutinating power, on admission, was negative in 30 cases, and varied from 1:5 in 89 cases to 1:50 in 12 cases, the average of all being 1:15. On discharge the agglutinating power had been diminished or lost entirely in 23 cases, all of which grew worse or died. Disregarding the clinical results secured short of apparent cure, of 133 cases showing agglutinations up to 1:100, 11.27 per cent. were apparently cured. Of 193 cases showing agglutinating power over 1:100 and not exceeding 1:200, 41.45 per cent. were discharged apparently cured. Of 173 cases showing agglutination in dilutions of over 1:200 and not exceeding 1:300, 84.9 per cent. were apparently cured. Of 45 cases showing agglutination in dilutions of over 1:300, 93.33 per cent. were discharged apparently cured.

In contrast to these, for example, are compared the results reported by Ravenel and Landis in 18 early-stage cases in the White Haven Sanitarium, in which specific medication had not been employed; after treatment for 4 months to 1 year none of these patients showed agglutinating power in dilutions exceeding 1:30.

The authors have further shown that growth of virulent tubercle bacilli upon the sera of patients showing varying agglutinating values is retarded in proportion to the degree of agglutinating power present, and that guinea-pigs inoculated with the respective cultures, although all developing progressive tuberculosis with fatal termination, lived the longer the greater had been the agglutinating value of the serum used as the culture medium. These results, if due to the presence of agglutinins or other antibodies, unmistakably indicate a favorable action *in vitro* as *in vivo*, which in the latter case is, of course, conditional upon the persistence of the agglutinating power in the patient's serum for a long period of time.

Whether or not this condition is actually fulfilled in the living blood may be inferred from the examination during the past year of 41 cases who had been discharged after specific treatment and who had remained

well from two to ten years subsequently. Of 15 cases discharged 2 to 3 years previously the agglutinating power was less than 1:100 in 1; over 1:100, but below 1:200, in 10, over 1:200 in 4. Of 15 cases discharged 3 to 5 years previously, agglutinating power was less than 1:100 in 4; over 1:100, but below 1:200, in 11. Of 11 cases discharged 5 to 10 years previously, the agglutinating power was less than 1:100 in 7; over 1:100, but below 1:200, in 4.

Specific amboceptor was also determined in 7 of these cases, varying in degree from 1:60 (in one case discharged 5 years ago) to 1:4 (in one case discharged 3 years before). Similar results were noted in the opsonic index.

Active immunization by means of tubercle bacilli or their proteins is thus shown to promote the formation of agglutinins and of other immune bodies in various degrees, and in the permanency of results shown in 602 cases tabulated in the report of the Winyah Sanitarium for 1907 the authors believe themselves justified in assuming a relation of the immunity induced or increased by specific treatment. The authors also report on 71 cases in which the specific amboceptor and the opsonic index were determined on admission during treatment and on discharge, in many of which daily observations were made.

They have likewise studied the sera of 30 adults free from tuberculosis and in good health otherwise, and for other purposes the sera of 20 new-born children, 13 of non-tuberculous parentage and 7 in whom one of the parents had a history of tuberculosis. The results show that specific immune bodies were never found in the sera of normal adults nor of babies whose parents were free from tuberculous taint; that specific amboceptor is, as a rule, present in tuberculous subjects and in their children at birth, and that under treatment it was increased on an average by 150 per cent., and that at the same time the opsonic index also increased, showing an average gain of 27 per cent. When the various readings are charted from daily observations, the agglutinins show an almost uninterrupted upward course, while the amboceptor and the opsonic index show rises and falls which correspond to Wright's positive and negative phases.

The curve for specific precipitins varies also, but in an inverse manner to that of amboceptor and opsonic index. The precipitins increase, on the whole, under immunization, but, in contrast to amboceptor and the opsonic index, they rise sharply after an injection.

The authors have also made observations of the blood alkalinity on admission and discharge in a large number of cases. Under immunization the rate and uniformity of increase in favorably progressing cases is remarkable, reaching points far exceeding the normal. The relation of blood alkalinity to the clinical results obtained is similar to that shown for agglutinins, amboceptor and opsonins, and it appears as though prognostic deductions can be made from its degree on admission. In the determination of blood alkalinity Dare's spectroscopic method was employed. The observations reported show that an increase in alkalinity

occurs with successful immunization and, like the increase in agglutinins, the degree of alkalinity stands in a certain relation to favorable results of treatment. While it is not claimed by the writers that this is in any sense specific, they nevertheless believe that the alkalinity of the blood is an important factor in resistance, it being a well-known fact that, especially in infectious diseases, it increases during convalescence and diminishes when the disease follows an adverse course.

From their laboratory studies coupled with their clinical experience, in which they are supported by the evidence from literature, the authors believe that they are justified in asserting that after active immunization the protective substances as well as the blood alkalinity are increased, and that *pari passu* with this increase there occurs a corresponding improvement in the condition of the patient and in the tuberculous process.

Concerning the choice of preparations for immunization the aim should be to induce active bacterial rather than antitoxic or passive immunity, it being essential that the organism elaborate its own protective substances and maintain this function for the longest period of time possible. For this purpose the bacillus itself or its soluble products are necessary. Such preparations are represented by Koch's bacillen emulsion and by the watery extract of tubercle bacilli, which latter the authors have employed in the treatment of their cases.

The question of the selection of cases suitable for immunization has been considered fully in the report of the Winyah Sanitarium for 1909. In this the state of nutrition is all important, and in cases in which this is seriously impaired or is progressively declining there is little or no response in the formation of immune substances. Thus should be excluded exhausted and cachectic patients and those whose general condition is on a decline on account of higher degrees of fever and of complications. For the results obtained reference is made to the clinical reports of Winyah Sanitarium. In that for 1909 a tabulation of 1,503 cases treated with watery extract of tubercle bacilli shows that on discharge apparently recovered were 55.5 per cent., improved 33.8 per cent., stationary or progressive 10.7 per cent.

In the report for 1907 were likewise published the experiences with the same preparation of over 100 independent observers, most of them in general practice, and without the advantage of climatic influence or of special training in the treatment of tuberculosis. The summary of their results gives the following percentages: apparently recovered, 50.3 per cent.; improved, 29.4 per cent.; stationary or progressive, 20.3 per cent.

It is of interest that most of the clinical results reported by the writers and those of others have been obtained without laboratory control, the success accomplished being entirely due to conservative methods of dosage and frequency of administration and in proper attention to individual requirements otherwise.

INCIPIENT TUBERCULOSIS: DIAGNOSIS AND TREATMENT.*

C. W. CHAPIN, M.D.
WELDON, ILL.

The object of this paper is to call attention not to any new thoughts or original ideas, but to the importance of an early positive diagnosis of tuberculosis, and to the simplicity, effectiveness and success of the treatment of this plague of humanity. In the early part of the first stage of this disease there probably is no disease so amenable to proper persistent treatment, and but few more insidious in their onslaught, more difficult to recognize, more discriminating in choosing for its victims those least able to resist its onslaught, both physically and financially. A large majority of tubercular patients are found in the slums of the cities and in the tenements of the country. They are the poorly fed, insufficiently sheltered and ignorant, wherever found. These, the charges of the state in reality, are least cared for, are permitted to go about untreated, untaught, until driven from work they are thrown upon public or private charity. But in the meantime, what has happened? These patients—and their number is great—have been going among the healthy, expectorating daily millions of bacilli, without let or hindrance. So as physicians and guardians of the public health, it behooves us to recognize this disease in the beginning, and teach our patient to properly care for himself, his relatives and the community.

But how are we to recognize the beginning of tuberculosis? Many cases do not present themselves until late in the disease, but, unfortunately, many of these cases we treat for dyspepsia or some other obscure name for a disease, until the period of best prognosis is past. Nearly half of the cases of tuberculosis have been treated for something else. Let us consider some of the tell-tale symptoms and signs of tuberculosis.

Cough, except in children and the aged, is invariably present, though it may escape the patient's observation. At first a dry, hacking, paroxysmal, unproductive cough, later a little mucoid expectoration is raised. This continues progressing with the disease until secondary infection occurs, when the sputum assumes a purulent character. Neither the cough nor the expectoration are pathognomonic as to time or intensity or character of either, except the bacillus to be considered later. In nervous, irritable patients the cough is worse than in the phlegmatic. It is provoked by (1) congestion due to posture (night cough); (2) secretion as in the early morning cough; and (3) by irritations, as changes in temperature, alcoholic excesses, dust, exertion, etc. Severe paroxysms, especially in early laryngeal tuberculosis, may assume serious proportions early in the disease. The early cough is often more violent than the pathology or secretion would justify, due to toxic irritation of the vagus. The sputum varies in different patients, and in the same patient from day to day. The only characteristic of the sputum is the *Bacillus tuberculosis,* which, if

* Read at Joint Meeting of the De Witt County and Brainerd District Medical Societies, July 15, 1909.

found, is pathognomonic. This is found in 30 per cent. of the incipient cases. Repeated and persistent examinations should be made in all suspected cases, but negative findings do not contraindicate the disease.

Temperature is one of the first symptoms in importance in tuberculosis, but is rarely noticed by the patient. During the activity of the disease it is invariably present sometime during the day. Generally, from one-half to three degrees are observed, about the middle of the afternoon. It is influenced by the advancement of the disease in varied extensions and complications, and its abatement marks the arrest, either temporarily or permanently, of the disease. It is intermittent in the favorable cases, but in the rapidly advancing it may be continuous.

Digestive disorders are often the complaints for which the patient seeks relief. They are anorexia, flatulence, constipation or diarrhea, with noticeable loss of weight and strength. Emaciation is nearly always present, and a gradual loss of weight will tell us that our patient is afflicted with a serious disease. These patients always show an afternoon rise in temperature and a slight cough.

The heart is almost invariably weak and muscularly inefficient. The pulse is weak, rapid and unduly susceptible to exertion during the afebrile periods. The first sound is short and weak, and the second delayed, auscultation giving the impression of an embryocardia. This condition frequently precedes the other symptoms or demonstrable signs, and is due to the toxemia affecting the heart muscle and its innervation. This is one of the most important signs in giving a prognosis.

Hemoptysis is the first symptom noticed in 4 per cent. of the cases of tuberculosis, and is the only symptom appearing in 16 per cent. of these. It is more frequent in men than women, and is rare before puberty. During the first stage of the disease it is, as a rule, slight, and is due to erosion of the bronchial mucous membrane, although in a personally observed case there were two hemorrhages on two successive days of one quart each, this being the first symptom appearing. These copious hemoptyses are generally late manifestations, and are due to erosion of the vessel walls or of small aneurisms. Any hemorrhage accompanied by cough is extremely suggestive, and if the source of the blood is the lungs it should be considered tubercular until disproved. The blood aspirated into sound lung areas during a hemorrhage frequently causes tuberculous pneumonia. Thus exacerbation of the disease following hemorrhage is of very serious import.

Anemia is frequently present during the early stages, and I believe the more thoroughly we examine into the other symptoms of chlorosis and allied anemias, the fewer of these we will find.

Passing rapidly over the physical examination, we find a few points claim our attention in the very early cases. There is a marked absence of physical signs early in the disease, although a few will almost invariably be found. Decreased expansion on the affected side is nearly always present, and a decreased excursion of the affected apex is observed. While the apices or the clavicular areas may not show dullness, there is a shortening of the note. Auscultation is of greater importance, and early

shows the expiratory murmur prolonged and weak, rough and high pitched in character. The two sides should be carefully compared, remembering that the right normally gives us higher-pitched breath sounds than the left. Râles may or may not be present, and if heard may not be tubercular. The voice sounds may be early modified, the affected area giving a high-pitched near-sound, distinctly different from the normal lung.

The diagnosis of early tuberculosis must be made from logical deductions, considering the foregoing symptoms as they are found, and by the exclusion of other diseases. It is safe to consider all cases as tubercular that show a positive decline in health, during the second, third or fourth decades of life, and which show no positive signs of other disease. Especially if they show a slight cough, an afternoon rise in temperature, or the peculiar circulatory phenomena. It is my custom to treat such cases as tubercular until cured or local signs appear, or until other indications arise, which is infrequent. However, we have a means of great aid in obscure cases, in the tuberculin reaction, or some of its more recent modifications. It has been demonstrated in the recent International Congress on Tuberculosis that the cutaneous tests are absolutely free from danger, and accurate, especially in excluding the disease in children under 1 year old; containing only the elements of error common to the other similar tests, to be considered later; but it has a valuable prognostic point as well, the seriousness of the attack varying inversely with the reaction. "The normal reaction runs its course in four days; the rapid reaction, which is complete in twenty-four hours and indicates an unfavorable prognosis; the permanent reaction which persists for from six to twenty days and is a favorable prognostic sign; it is chiefly observed in cases of healed tuberculosis." (Wolff-Eisner.)

The ophthalmic reaction is free from danger if used with proper precautions; does not react in healed tuberculosis, as the Moro test does; is comparatively accurate, but is objectionable to the patient, and should not be used in children. It seems to be generally accepted by the same congress that the above reactions are as reliable as the subcutaneous injection, and producing no reaction on the diseased area, they should supplant that procedure.

Under treatment, we will only briefly consider the three cardinal principles in addition to the specific treatment. From the standpoint of public health, every case of tuberculosis should be reported to the health authorities, and he should be taught especially the personal hygiene of his disease. All his excretions should be sterilized, including the feces, urine and sputum, the latter by burning. The people should be taught that the state should build sanatoria; and tuberculosis, like smallpox, should be the especial charge of the state. The individual who is especially subject to this disease should be taught that as nearly perfect health should be maintained as possible. That good general health, with an optimistic spirit and the absence of dissipation, are good preventives of consumption.

When affected the patient should have (1) fresh air (plenty of it in a tent); (2) plenty of good nutritious food (not forced feeding); and (3) complete mental and physical rest. Changes in climate are important, increasing the prognostic outlook by about 10 per cent. But no patient should be sent West without means to stay from three to six months without work and with proper care and tent life. Many of our patients cannot do this, but with careful treatment 80 per cent. of these cases will recover. Tent life is the hub around which should revolve the other expedients of treatment. It holds first place in importance, and every patient showing the least evidence of tuberculosis should be placed in a tent.

The so-called specific or tuberculin treatment is in its infancy as yet, but the results are very encouraging. At the recent tuberculosis congress, Denys reported 50 cases treated with tuberculin-filtrate, with 100 per cent. recoveries, and in 21 cases treated as controls with the hygienic-dietetic methods, 5 cases died. These were all prebacillary or "closed" cases. The consensus of opinion is almost as optimistic as the above report, only Meissen offering a pessimistic report. Good results have been obtained by all the different tuberculins. On the other hand, Maragliano's serum is condemned by Landis and Flick. An aseptic technic must be observed and a dose used small enough not to produce a reaction. The initial dose of the old tuberculin is given as one ten-thousandth to one-thousandth mgm., the former being used in febrile and the latter in afebrile cases.

Weekly injections are used, gradually increasing the dose. For more specific directions on administration reference may be made to papers by Hammer or Denys in the Proceedings of the *Sixth International Congress of Tuberculosis.*

With proper general hygiene supplemented by tuberculin treatment begun in the prebacillary stage, I believe our mortality in chronic phthisis will reach a very low figure.

TUBERCULAR PERITONITIS.*

ROBERT A. NOBLE, M.D.
Surgeon to St. Joseph Hospital.
BLOOMINGTON, ILL.

From an etiological standpoint, tubercular peritonitis is often obscure, but it may be a primary infection. Most commonly, however, it is secondary to tuberculosis of the mesenteric glands or lymph nodes. Again, it may be secondary to tuberculosis of other parts of the body.

It has been generally accepted that the most frequent route of entrance into the peritoneal cavity in women was through the Fallopian tube (Henry O. Marcy,[5] Mayo[6]) and the vermiform appendix or tubercular disease in the ileocecal region.

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* Read before the Ford County Medical Society, Oct. 12, 1909.

W. Allschut[7] believes the path of infection is from the peribronchial lymph through the perforating lymphatics of the diaphragm into the peritoneal cavity, chiefly to the retroperitoneal glands which are almost always involved in tubercular peritonitis. The tubercle bacilli may also pass through the diaphragm and produce localized tuberculosis of the lower surface of the membrane as sometimes occurs in early cases.

Pathologically, the process consists of the formation of miliary tubercles on the peritoneum which give rise to opaque cheesy thickenings, often nodular and with firm adhesions to the adjacent surfaces. This pathologic condition may or may not be accompanied by an exudation into the peritoneal cavity; the ascites may be serous, seropurulent, or purulent in character and of different amounts, but the amount of fluid, when any is present, is usually considerable.

Three forms are to be considered (1) a miliary tuberculosis with ascites, acute or subacute in its course; (2) a fibrous form in which ascites may be, but usually is not, present; (3) a later stage of the above form in which there occur large tubercular deposits with caseation and softening. This form has been called the ulcerative by some pathologists, and in it the lungs are usually affected.

The peritoneum may be one of the sites of a local manifestation of a generalized miliary tuberculosis, but the term tubercular peritonitis is generally understood to apply to the chronic form of the disease which in a measure constitutes a distinct affection. Even here the disease is usually secondary to disease appearing primarily in some distant part, most commonly the lungs; or the peritoneal involvement may follow by direct extension or by dissemination through the lymph paths or by a simple process of grafting from a previously ruptured tubercular focus having access to the peritoneal sac and sowing, as it were, the elements of the disease over the entire membrane.

Since 1884, when Koenig performed the first operation for tubercular peritonitis, this subject has received considerable attention from both the internist and the surgeon, so that the literature teems with the diametrically opposed views of the practitioner and the surgeon.

Borchgrewink[1] based his conclusions on a study of 40 cases. Of 22 operative cases, 8 were light, 6 moderate, and 8 severe. Fourteen, or 63.6 per cent., recovered and 8, or 36.4 per cent., died. Of 17 patients treated without operation, 14, or 82 per cent., recovered and remained well two or three years. His views are as follows: "Laparotomy is well tolerated in strong patients without fever and in a good state of nutrition; i. e., where their condition speaks for a spontaneous disappearance of the tubercular process. Laparotomy, however, in patients with fever, where the tuberculosis has a progressive character, must diminish what slight power of resistance such a patient has remaining. This power of resistance may thus yield and death follow; or it may, by concurrence of fortunate circumstances, rebound and the patient recover in spite of the operation. That form of peritoneal tuberculosis which exists without fever or with

only slight fever runs in itself a favorable course. In such cases laparotomy is unnecessary. In progressive tuberculosis the operation is dangerous and should be abandoned."

Henri T. Fontaine[2] asserts that results from medical treatment appear to equal those from surgical treatment and strongly advises a thorough trial of medical treatment before resorting to surgical treatment.

Joseph Eichberg[3] insists rather sarcastically that laparotomy *cures because it does not,* and asserts that the mortality is higher in cases treated surgically than in those treated medically.

P. E. Elestratov[4] reports a series of 136 cases treated medically, of which 31.6 per cent. recovered from medical treatment alone, while of 240 cases, 78.3 per cent. recovered as a result of surgical intervention. Elestratov believes that the variety of tubercular peritonitis which runs an almost stationary or chronic course, with moderate temperature and not much ascites, without interference with nourishment, is capable of retrogressing to permanent recovery, provided no other organs are afflicted with tuberculosis. When the existence of tubercular foci can be established serving as the starting point for infection of the mesenteric glands, intestines or uterine appendages, surgical intervention is urgently indicated.

Parker Syms[4] says: "To-day it is as true as ever that laparotomy *per se* will effect a cure in certain cases of tubercular peritonitis; and to-day we are as ignorant of the reason why this remarkable phenomenon takes place as we were when it was first discovered and demonstrated. On the other hand, much has been learned in the last ten years of the rationale of the treatment of tubercular peritonitis.

"For instance, we have learned that operations should not be undertaken during the first years of infancy; we have learned that surgery offers but little hope in the adhesive variety of the disease; we have learned that the serous variety offers the best prognosis under the various forms of treatment and that surgical treatment of this variety offers the best results obtainable in the disease; but the most important lesson we have learned is that the scientific operation of to-day is the one which has for its foundation the removal of the original focus of the disease, as tubercular Fallopian tubes, vermiform appendix, mesenteric glands, etc. Statistics have proved that cases treated by operation have done better than a similar series of cases treated without operation. We realize the importance of hygienic treatment; we realize the impropriety of operating on all cases of tubercular peritonitis; we realize that laparotomy should not be performed when the peritoneal trouble is only one phase of a more or less general tuberculosis."

From Nov. 26, 1903, to March 30, 1909, fifteen patients have submitted to laparotomy for tubercular peritonitis or tubercular peritonitis was found at the time of the operation. In five cases (33.3 per cent.) the diagnosis was made previous to operation. Fourteen, or 93.3 per cent., of the cases were females. Thirteen (86.6 per cent.) were American born; one Swedish, one negress. In eight cases (53.3 per cent.) the

appendix was primarily involved. In four cases (26.6 per cent.) the Fallopian tubes were primarily involved. The youngest patient was 14 years of age, the oldest 34 years of age. Average age for the series was 24 years. In two cases the indications for operation were symptoms of an acute attack of appendicitis, in which gangrene of the appendix was presen. at the time of operation. (Nos. 1, 3.) The length of time elapsing since the operation in Cases 1 to 12, inclusive, is one year and five months to five years and seven months, or an average for the series of three years and six months, during which time the patients have remained well and free from symptoms of tubercular peritonitis. In No. 6, one year and eleven months subsequent to the operation for tubercular peritonitis, patient submitted to operation for cholecystitis, at which second operation no evidences of the former tubercular disease was discoverable.

CONCLUSIONS.

1. Tubercular peritonitis of the serous variety is best treated by laparotomy.

2. Great care should be exercised in making intra-abdominal manipulations and examinations, not to cause abrasions.

3. In the adhesive variety no attempt should be made to disturb the adhesions.

4. The less the tissues are handled the better will be the results.

5. Removal of the primary focus of the tubercular peritonitis when possible should always be performed, i. e., appendix, tubes, etc.

In performing these operations the median incision was used. In every case a variable amount of straw-colored fluid escaped, containing flocculent material in Cases 1, 5, 6 and 12. The peritoneal surface was studded with tubercles, except in Case 14. In each case, after removing the affected organ, appendix or tubes, the abdominal cavity was mopped dry, flushed with normal salt solution and the abdominal walls were closed in layers. No drainage was used except in the first case.

CASE HISTORIES IN BRIEF.

CASE 1.—Mary P., aged 26 years. Family history negative as to tuberculosis. Personal history: has never been seriously sick but during past two or three years has complained of being easily exhausted on slight exertion. Has had slight cough without expectoration. Colicky pains over abdomen with occasional periods of extreme tenderness over entire abdomen. Abdominal distention at times.

Nov. 24, 1903: Patient has been sick about one week. Illness began with nausea, vomiting, chill, elevation of temperature to 101 to 103 F. Abdominal distress, which for the past two days has been more or less localized in appendiceal region. Rectus rigidity over right side. Nov. 26: Temperature 99.6 F., pulse 150. Extreme prostration. General abdominal rigidity. Immediate operation advised. Patient removed to St. Joseph Hospital and operated upon on arrival at hospital. Peritoneum highly injected and studded with tubercles. Appendix tubercular and gangrenous from tip for about one inch but not perforated. Removal of appendix. No adhesion broken up. Cigarette drain to appendix stump. Formalin 1 to 1000 dressing. Nov. 27: Removal of cigarette drain. Dec. 15: Wound healed per primam. Patient removed to her home. June 15, 1909: Patient has been in good health since operation. No return of any tubercular indications.

CASE 2.—Hilda E., aged 22 years. Female. Swedish nativity. Family history negative as to tubercular conditions. Personal history: For several months previous patient has noticed gradual abdominal enlargement so that the waist bands must be changed. Physical weakness increasing rapidly so that patient is easily exhausted. Has had no cough, but has had temperature elevation from time to time. Complains of radiating pains over abdomen and under shoulder blades. Physical examination: Patient appears sickly. Skin has yellowish muddy appearance. Temperature 102 F.; pulse 120, weak and irregular. Hemaglobin 65 per cent; mild catarrh of nose and throat; lungs and heart normal. Abdomen distended; abdominal breathing present. Slight rigidity of abdominal muscles on pressure. Percussion dulness over both flanks, which disappears on change of position. Vaginal examination, negative. Diagnosis, tubercular peritonitis with ascites.

Operation, June 10, 1904, St. Joseph Hospital. Tubercles scattered over peritoneum and intestinal coils. Appendix, uterus, adnexa, gall-bladder free from tubercular nodules. Some few adhesions freed.

Patient left hospital at end of eighteen days with instructions to live outdoors, forced feeding, general hygiene, and to report condition. Jan. 1, 1905: Has gained 20 pounds, hemoglobin 85 to 90 per cent. Works daily as housemaid. Jan., 1908: Letter states patient has not been sick since leaving the hospital. Shortly after this letter patient returned to Sweden and no further report has been obtained.

CASE 3.—A. R., male, aged 14 years. Family history negative as to tubercular history. Personal history: Recurrent attacks of colicky pain over abdomen for two or three years with occasional slight elevation of temperature and occasionally localized tenderness in region of appendix.

March 4, 1905, called at 5 a. m. to see patient. Temperature 99.6 F. Extreme tenderness over appendiceal region. Removal to Brokaw Hospital. Operation March 5, 1905. Tubercular deposits on appendix and peritoneal surface. Gangrene of appendix for one-half inch from tip toward cecum. Removal of appendix. At end of fourteen days patient returned home. Postoperative course: Steady improvement in general health since operation. No return of abdominal symptoms. July 1, 1909: Present condition of health excellent.

CASE 4.—Mrs. B., female, aged 32 years. Negress. Patient of Dr. E. L. Brown. Seen at St. Joseph Hospital in March, 1905. Family history negative. Personal: Abdominal pains and distention during past year. Intermittent elevation of temperature. Generalized pain on pressure over abdomen. Vaginal tumor size of bologna-sausage occupying left lower pelvis. Operation March 11, 1905, St. Joseph Hospital. Tubercular deposits on peritoneum, left Fallopian tube, and intestinal coils. Left tube enlarged but not fluctuating. Removal of tube. End of three weeks patient returned home and at end of six weeks resumed household duties contrary to advice. Pathologic: Microscopic and macroscopic, left tube showed tubercular process. Present condition good.

CASE 5.—H. A., female, aged 25 years. Family history negative. Personal history: Has had "shooting" pains through abdomen for past eighteen months to two years with generalized tenderness. No localized tenderness at any time. Intermittent fever. July 8, 1905, operation. Tubercular deposits on intestinal coils, in mesentery, and appendix. Removal of appendix. Patient returned home at the end of two weeks. July 1, 1909: Patient states general health has been very good since operation. No return of abdominal pain or discomfort.

CASE 6.—S. S., female, aged 28 years. Has been sickly for several years but no serious illness. Has complained of "stomach" trouble, abdominal distress, nausea, vomiting, general weakness, easy exhaustion. Occasional fever. Aug. 25, 1905: Taken sick during the night with chill, fever following, nausea, vomiting, and abdominal pain. Examination shows rigidity of right rectus with extreme tenderness on pressure in appendiceal region. Pulse 120. Temperature 102 F. Between this date and Aug. 29 condition remained practically unchanged. Aug. 30: Persistent vomiting. Pulse 140, temperature 100 F. Marked abdominal rigidity. Removed to Brokaw Hospital; operation this date. Peritoneum studded

with tubercles. Appendix tubercular. Tubes, uterus, etc., free. Removal of appendix. Uninterrupted recovery. Patient home at the end of three weeks. Continued in good health until May, 1907, when she had an attack of cholecystitis which was quite severe. These attacks continued until July 15, 1907, when an operation was performed for cholecystitis at Brokaw Hospital. After opening abdominal cavity careful examination of peritoneum was made for former tubercular foci but none were found. Gall-bladder enlarged. Ductus and bladder free from stones. Gall-bladder drainage. Patient returned home in four weeks and has remained in good health to present date, having gained some 20 pounds in weight since first operation.

CASE 7.—A. P., female, aged 21 years. Family history negative. Personal history: Complained of abdominal pain and distress for two years. Occasional severe colicky attacks of pain radiating over entire abdomen. Says cannot wear corsets on account of pressure on abdomen. Tenderness general over abdomen. Has had occasional severe attacks accompanied by slight temperature elevation. Abdominal distention frequent.

Dec. 12, 1906: Operation. Peritoneum injected and occasional tubercles on peritoneum and intestinal coils. Appendix tubercular. Removal of appendix. End of two weeks patient up and about. Since then health has improved greatly. Has gained 30 pounds in weight and at present writing is in excellent health.

CASE 8.—Mrs. McK., female, aged 28 years. Patient of Dr. Strauss.

June 3, 1907: Seen at Brokaw Hospital. Has been sick for two years. Abdominal distress, indigestion, nausea, vomiting. Pain on pressure over abdomen, more on right side than on left. Frequent colicky pains radiating over entire abdomen. Abdominal distention. Hemoglobin 75 per cent.

June 5, operation. Peritoneum covered with tubercles as also intestinal coils and appendix. Uterus and adnexa free. Removal of appendix. Returned to her home at the end of eighteen days. Subsequent history negative as to tubercular peritonitis.

CASE 9.—Mrs. H. R., aged 22. Patient of Dr. E. L. Brown. Seen in consultation Nov. 27, 1907. Family history negative. Personal history: Married six months. Since marriage irregular menstruation. Colicky pains over abdomen. During past month flowed some every few days. Lungs normal, abdomen distended, tender to pressure over right quadrant. Vaginal examination: Tumor in right pelvis extending from uterus, which is enlarged. Tumor about size of hen's egg. Examination very painful to patient. Diagnosis, extrauterine pregnancy. Operation, St. Joseph Hospital, Nov. 29. Peritoneum studded with tubercles. Right tube enlarged size of hen's egg and covered with tubercles. Right tube removed. Pathologic report: Right tube size of hen's egg. After opening same found to contain yellowish caseous mass. No evidence of tubal conception. Patient returned home at the end of three weeks. Has been well since operation. No distress or illness since leaving hospital.

CASE 10.—L. B., nurse, aged 22 years. Has complained of abdominal tenderness for two years. Daily temperature for past eighteen months 99 F. to 101.2 F. Colicky pains over entire abdomen. Lungs normal. Abdomen distended, painful on pressure over both right and left areas. Diagnosis, tubercular peritonitis. *X*-ray treatment for six months without relief from pains or distention. Operation Jan. 16, 1908, Brokaw Hospital. Tubercles on peritoneum and appendix. Uterus and adnexa free. Removal of appendix. Left hospital in three weeks and sent to Texas, where there was steady improvement. Returned in October and during winter complained of considerable distress in abdomen. Again sent to Texas, where she has remained since. Letter states condition of health is excellent at present time.

CASE 11.—A. G., female, aged 24 years. Family history negative as to tuberculosis. Personal history: Has never been a robust individual but has had no serious illness. For past three years has complained of abdominal distress. Indefinite colicky pains radiating over abdomen and under shoulder blades. Frequent abdominal distention. Occasionally generalized pain on pressure over entire

abdomen. Slight cough (dry), rather persistent, without expectoration. For past six months irregular and painful menstruation, which previously had been regular and painless. Examination: Hemoglobin 70 per cent, temperature 100 F., pulse 100. Lungs and heart normal. Abdomen, no distention present. Complains of tenderness on pressure. Slight abdominal rigidity. Vaginal examination shows tumor extending from uterus on both sides. Gonorrheal history fails. Microscopic examination of vaginal secretion and urethral secretion negative as to gonococci. Jan. 10, 1908: Operation, St. Joseph Hospital. Peritoneum studded with tubercles. Both tubes enlarged and covered with tubercles. Removal of both tubes. Patient left hospital at end of three weeks and has remained in good health since operation to present date. Pathologic examination: Both tubes filled with caseous material. Sections show tubercular areas throughout tubes.

CASE 12.—R. T., female, aged 22 years. Family history negative. Personal history: Has been sickly for about one year but not confined to bed at any time. During past four months has complained of abdominal distress. Irregular and painful menstruation which previously had been regular and comparatively free from distress. Has also complained of abdominal distention and pronounced weakness on slight exertion. Physical examination: Chest negative as to heart and lungs, abdomen slightly distended and tympanitic on percussion. Palpation, slight rigidity of rectus, more on right than left. Patient complained of intense pain on slight pressure. Vaginal examination: Small sausage-shaped tumor extending from uterus to the right which involved the right Fallopian tube. March 12, 1908: Operation. Peritoneum highly injected and studded with small tubercular deposits. Appendix free from tubercular deposits. Right Fallopian tube greatly distended, moderately firm, studded with tubercular deposits. Removal of the right tube. At the end of three weeks patient returned to her home and has remained free from any tubercular symptoms since the operation.

CASE 13.—R. C., female, aged 18 years. Has been sick for four months with colicky pains over the abdomen. Slight elevation of temperature from time to time. Localized tenderness and rigidity over the appendiceal region. For four weeks previous to operation patient was confined to her bed owing to extreme distress over abdomen, during which time temperature ranged from 99 to 101 degrees daily. Dec. 20, 1908: Was removed to St. Joseph Hospital and prepared for operation. Dec. 21: Operation. Found peritoneum studded with tubercular deposits. Appendix was enlarged and highly injected and studded with tubercles. Uterus and adnexa free. Removal of appendix. At the end of ten days patient returned home and has gained 35 pounds since operation. (August, 1909.)

CASE 14.—C. R., female, aged 24 years. Family history negative. For six or eight months previous to operation patient has complained of abdominal distress and pain under the shoulder blades. Colicky pains throughout the abdomen with more or less localized tenderness in region of the appendix. Elevation of temperature was not noticeable at any time. March 29, 1909: Taken with acute distress in the abdomen, vomiting, temperature 101 F. Rectus rigidity on right side. March 30: Continuation of symptoms of day before with increased pain in the appendiceal region. Very marked rigidity of right rectus. Patient removed to St. Joseph Hospital for immediate operation. Operation 9 p. m. Parietal peritoneum showed no tubercles. The appendix swollen, retroperitoneal. After opening the posterior peritoneum the appendix was found to be covered with tubercular nodules. Removal of the appendix. Microscopic examination of the appendix showed it to be tubercular. At the end of ten days patient returned to her home and has remained in good health ever since.

CASE 15.—Mrs. C., aged 34 years. Patient of Dr. C. E. Chapin. Family history: Two sisters died with pulmonary tuberculosis. Personal history: Six months previous, patient had been confined. Three months after delivery menstruation resumed. During past month irregular flowing every few days. Complained of nausea and abdominal distention. Second day patient was in the hospital nurse reported passage of small amount of membranous matter per vagina. Examination: Abdomen tender to pressure from costal margin to pelvic floor. Lower abdomen distended more to right side than left. Vaginal examina-

tion: Large mass to right of uterus and posterior so that uterus was displaced to the left. Uterus slightly enlarged. Diagnosis, extrauterine pregnancy. Confirmed by C. E. Chapin and C. T. Orner. Operation, St. Joseph Hospital, April 7, 1909. Peritoneum, mesentery, and intestines studded with tubercular mass. Omentum and intestines matted together in pelvis so as to form large tumor mass which was mistaken for the extrauterine pregnancy. Abdominal cavity was mopped dry, flushed with saline solution and closed in layers. Patient left the hospital in sixteen days and has continued in good condition since operation. (August, 1909.)

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PELLAGRA.*

C. H. Lavinder, M.D.

Passed Assistant Surgeon, Public Health and Marine-Hospital Service.

WASHINGTON, D. C.

I am very much obliged to the President, Dr. Robison, for his kind words in calling me an authority on this subject, but I doubt seriously whether there is any one in this country entitled to be so called. However, I have had some experience with pellagra, and am only too glad to tell you what I know. In telling you what I know about this disease, perhaps it would be better for me to speak in a general way, rather than take up any particular points.

I take it, most of my audience have not paid a great deal of attention to this subject, and it is better to give a logical account of it than to take up any one particular phase. There are some here, however, who are quite familiar with certain phases of the subject. So if I should say things which are already known, I shall be sorry, but at least we shall try to gain a corrected idea of the entire matter.

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* Stenographic report of an address, with lantern slides, delivered before the Chicago Medical Society, Nov. 24, 1909.

The subject of pellagra is a new one to American medicine, and is attracting a great deal of attention, doubtless to some extent on account of its novelty. A couple of years ago, if you had said to almost any medical man, "I have a case of pellagra," very likely he would have asked you what that meant, because even the word was unfamiliar to a great part of the medical profession. Quite recently there was held a National Conference on Pellagra, at Columbia, S. C., which was attended by some 350 physicians and scientists, representing several states in the Union, so that you can see the immense interest that is now being taken in this subject. The word "pellagra" was introduced into medicine by an Italian by the name of Frapolli about 1760, who found the word in use among the common people of Italy. The word refers to the skin lesions of the disease, and means ulcerous or rough skin, a matter of some importance with regard to certain expressions in use. There are a great many synonyms, very few of which are in use, the word "pellagra" being common to all languages with which I am familiar.

As to the origin of pellagra, it is generally accepted that the disease was first recognized in 1735, and was first described by a Spanish physician by the name of Casal, a somewhat remarkable man in many ways, who wrote a good description of its symptomatology. Following its appearance in Spain, the disease appeared in France, later in Italy and Roumania and in other parts of the world. The story of the appearance of pellagra in the United States is interesting, but somewhat pathetic, and has never been fully told. I have not time to go into it, but I have been associated with some men who first recognized the disease, and the story is a very striking one, indeed.

The first recorded instance of any case of the disease occurred in 1864, at a meeting in Washington of asylum superintendents. It was mentioned there, but very little more than that, and several sporadic cases were reported up to 1907. In that year Alabama, South Carolina, North Carolina and Georgia all developed a number of cases, and the disease was recognized as being prevalent in this country.

When we come to take up the etiology of pellagra, we find a rather chaotic state of affairs in some respects, and yet there are two distinct points which we should remember, one of which is that the disease is always associated with poverty, and the other is, it is associated with the use of Indian corn as an article of diet. These two points or factors have been recognized with regard to pellagra ever since its discovery. Casal himself seems to have had an idea that the disease might be related to Indian corn. Now, the broad basis upon which the relation between Indian corn and pellagra rests is comprised in a few facts. In the first place, it is historical, and much of it is doubtful. It is said that pellagra followed the introduction and cultivation of Indian corn in Europe, which is supposed to have taken place in the year 1700. That is somewhat doubtful. It is said further that the disease develops where Indian corn cultivation spreads. That is also somewhat doubtful. It certainly seems to be a fact that the disease is not known endemically, except in those countries that grow and eat Indian corn, and eat it to

the exclusion of other varieties of food. There are many instances on record where in pellagrous sections the people of one village would be found entirely free from this disease, and this village would be found to subsist on food other than Indian corn. Facts of this character would lead us to put this disease and this food in a certain relation to each other. The subject has developed along certain lines, so that at the present day there have been put forth a great many theories as to the cause of the disease. Soon after Casal's time the idea was prevalent that the disease was due to Indian corn. It was probably first definitely enunciated by Marzari, in 1810, who thought that Indian corn lacked certain nutritive principles. This idea was later shown to be false, and another Italian by the name of Ballardini a little later advanced the new idea of spoiled corn. He had noticed that there grew on certain specimens of corn, molds, afterward shown to be sporosorium maidis, and offered the first suggestion that pellagra was due to damaged corn, and not to good corn. Following him, Lombroso, who did more work on pellagra than any other man of his time, developed this idea of Ballardini broadly, and put forward a theory which has found a great many adherents in one form or another.

The various theories at the present day with regard to the etiology of pellagra may be divided into two general classes. On the one side, the Zeists, or those who believe in Indian corn. On the other side we have the anti-Zeists, or those who deny such a causal relation. In the latter class we have only one school, and that is the French school. Their idea is that pellagra is not a morbid entity, but a symptom-complex found in depressed states, particularly among the insane. Any one who sees pellagra in insane asylums, and who sees it outside of such institutions, finds that the idea does not appeal to him near so much. The Zeists have put forth several ideas. First, the intoxication or toxico-chemical idea of Lombroso. This idea has been taken up and followed by a great many members of the profession, and a great many have entered this field in attempting to establish what parasites grow on corn and the chemical nature of the toxin involved. Lombroso did not determine the parasite involved, but claimed that chemically the principal toxic substance was alkaloidal in its nature, and that it was not any one substance, but probably two or three. The subject was left in doubt. In working with corn he did a great deal of experimental work on animals, and produced from spoiled corn a substance he called pellagrozine, which he thought to be the most poisonous substance found in corn. He left the matter in doubt, but remained a very ardent supporter of the toxicochemical theory of the cause of pellagra.

The next group of thinkers directed their attention to the idea of autointoxication or the toxico-infective theory. The idea seems to be that the normal flora of the intestine, the colon bacillus especially, when feeding on corn, develops the peculiarity of producing a specific toxic substance, and certain experimenters claim to have produced with the colon bacillus on corn media toxic substances of a specific nature; or else

that there is ingested with the maize some bacterium which produces the toxin within the intestinal tract.

We come to the third and last class, who regard the disease as an infection, pure and simple, either by bacteria or by molds, or by protozoa. Of those who regard the disease as an infection by bacteria, there is practically but one man to-day whose views are worthy of serious attention, and that is Dr. Tizzoni, of Italy. The idea of a specific bacterium in maize as the cause of pellagra dates back a great many years. Tizzoni's work is recent and must stand the test of time. He states that he has been able to isolate a strepto-bacillus from the blood and stools of pellagrins in the acute and chronic forms of the disease, and also from spoiled corn. This bacillus is specific, and will reproduce the disease in animals, particularly the guinea-pig, and it can be isolated from the guinea-pig's dead body. In his feeding experiments he fed laboratory animals with his bacillus without producing any disease at all, unless he added a share of corn to the diet, and if he did so the animals developed the clinical symptoms of pellagra and died. He further states that the animals died after a certain length of time, as long as ninety days, and that the toxin seemed to have a special selective affinity for the nervous system. I have been unable to secure any culture of Dr. Tizzoni's bacillus, although I have written to him two or three times, and I have been unable to isolate this bacillus myself.

The next idea is that the disease is due to infection by molds. This idea was put forward by Dr. Ceni, of Italy, in 1902, and is perhaps the most ingenious of all theories so far put on paper. This theory still stands unconfirmed. Ceni thinks pellagrous symptoms are due to the ingestion of molds, *aspergilli* and *penicilli*, but pays particular attention to the *aspergillus fumigatus* and *aspergillus flavescens*. These molds are later infective. They enter into and locate in various parts of the body, particularly in the pericardium, and in time produce local diffuse inflammatory lesions, and an absorbable toxin, producing finally the intoxication which we call the disease. Of the various varieties he thinks that the *penicillium glaucum*, when taken into the intestinal tract, acts purely there and nowhere else, and never invades other parts of the body. He also brings forward the rather remarkable idea that these molds produce toxins naturally during two seasons of the year, spring and fall, when pellagra is most evident in man, the toxins being produced at the culminating phase of the development of the molds, according to his phraseology. He also says that mold spores withstand being boiled for fifteen or twenty minutes, and this would have some bearing on the cooking of food. He further states that he has isolated these molds at autopsy in pure cultures, and has been able to reproduce the disease by feeding spoiled corn to chickens and finding the same lesions as are found in man, so that his work looks plausible, but it has not yet been confirmed.

Then we have the idea of protozoa, suggested by Sambon in 1905, at a meeting of the British Medical Association. This idea is attractive in these days of protozoa and spirochetes. He produces evidence discrediting the history of the introduction of corn culture into Europe and its

relation to pellagra, and then attempts to show that because there is a relatively large mononuclear increase in the blood, a perivascular round-cell infiltration in the brain, as in sleeping sickness, and because the disease is modified by the use of arsenic, that probably pellagra is protozoal in nature.

There has been some work done also with reference to the Wassermann reaction in America and abroad, showing that we get a positive Wassermann reaction by using lecithin as antigen; but nobody has found protozoa in the organs or elsewhere, and that leaves it to be an interesting suggestion, but nothing more. These are all the ideas that have been put forth in connection with the etiology of the disease, except the predisposing causes, which are of some importance.

The disease is largely related to poverty. It does not seem to occur among the best class of people, although we do find it in America among people who are fairly well to do. In Italy, however, it is the poorest of the population that suffer from pellagra, and usually it is the poorest class of the rural population.

Sex seems to have some connection with the disease, for the reason that 75 per cent. of the cases found in this country have been in colored females, the explanation of which is lacking. Alcoholism plays some part in the disease. Alcoholic drinks made from spoiled corn are said to be just as bad as eating spoiled corn. Climate and seasons seem to have no relation to the disease, except by spoiling the corn.

Heredity is a matter of some importance in connection with this disease. It is hereditary in the sense that a person may have a predisposition for the disease, and there are some men who think the disease is actually hereditary. The offsprings of pellagrins, who are poorly developed physically, readily develop the disease.

CONTAGION.

We may speak a word here about contagion. The question of the contagiousness of pellagra has been fought out many years ago, and decided in the negative. This is a matter of some importance, since in this country a few regard the disease as contagious, and some quarantine measures have been enforced. This cannot be settled definitely, but, at the same time, for the present, we certainly have no right, it would seem, in the present state of our knowledge, to consider this disease contagious nor to use quarantine restrictions.

RELATION TO CORN.

When one looks over the various theories in regard to pellagra and its relation to corn, and thinks about the subject, he is not satisfied with any of the theories that have been put forth. The evidence in my opinion for corn is unsatisfactory in a great many respects, and it does not appeal to many minds; at the same time, I do not see how, with the evidence before us, which is large, we can get away from corn, in the present state of our knowledge, and I see nothing for us at present but to regard corn as bearing some etiological relation to pellagra, unless we can prove otherwise.

PATHOLOGY.

With regard to the morbid anatomy of pellagra, the post-mortem findings are not very characteristic. Roussel complained that when he came to do sections on cadavers he found but little morbid change to explain the clinical state, and what he did find was largely of a secondary nature. Changes common to many chronic diseases are frequent. Atrophy of the various organs is not unusual, nephritis, nearly always small spleen, enlargement of the mesenteric glands, intestinal congestion and possible ulcers, sometimes brown atrophy of the heart, and pigmentary and fatty degenerations in the liver and kidneys. The central nervous system seems to display the most characteristic changes.

There are discrepancies in the statements as to the usual lesions, but there is a fairly general agreement that there are degenerative changes in the posterior and postero-lateral tracts, especially in the dorsal and cervical regions. Lombroso seems to have attached importance to certain lesions of the sympathetic ganglia. It is of interest in this connection to state that at the recent conference on pellagra there were papers presented which showed a great prevalence of amebæ in pellagrins and some possible etiological importance was attributed to these parasites, but no definite expression of opinion was made. Protozoa are not uncommon in the stools of pellagrins, especially in insane asylums. In the South I have seen hookworms and roundworms, and flagellates frequently; but amebæ have not been common in my experience.

CLINICAL SYMPTOMS.

When we come to the consideration of the clinical picture of the disease, we again meet with much confusion. The disease is so protean in its manifestations and one sees so many types and so many changes that sometimes one wonders whether one is dealing with the same disease or not. In addition to that, there are regional differences. Patients in some sections manifest symptoms which are not seen in others. The cause of this is not known. Many attempts have been made to divide pellagra clinically into stages or periods. The ordinary division is into prodromal, first, second and third stages, this being an artificial division purely. Strambio, one of the early writers and first clinical students of the disease, divided it into intermittent, remittent and continuous, but that is not satisfactory. Roussel, a great French clinician, attempted to be a little more logical, and divided pellagra into pellagra of the first degree, or spasmodic pellagra, because he found that the spasmodic phenomena occurred early. After that, commencing pellagra, which was either prodromal or confirmed pellagra. Then pellagra of the second degree, or paralytic pellagra, the paralytic manifestations succeeding the spasmodic ones. And, finally, the third stage, cachexia, which he divided into two types: cachexia without skin manifestations (sine pellagra) and cachexia with pellagra. These divisions are not so simple as prodromal pellagra of the first, second and third stages. The disease does not develop in such a logical way as one would imagine from this scheme. Perhaps the division into prodromal first, second and third stages, being the simplest, is

the best. The prodromal stage of pellagra is seldom noticed; it is often passed over by the patient because the symptoms are not severe, and because it occurs among a class of people who do not complain. It is usually vague, but may be marked, and may last many months. It is characterized by lassitude, headache, some pain in the stomach, digestive disturbances, perhaps a little vertigo and muscular weakness, and these symptoms may continue for some time. They may continue for an indefinite time, say a month or two or a year or two, until finally in the springtime or fall there appears the exanthem which characterizes the disease, and then we pass into what is called the first stage. Now, pellagra is an endemic, epidemic disease which recurs either in the spring or fall nearly always, but not necessarily so by any means. It may continue throughout the winter. There are three systems of the body which the disease usually involves, namely, gastrointestinal, nervous and cutaneous, forming the pellagrous triad. There is usually a predominance of the gastrointestinal symptoms in the first stage. If you see a patient for the first time after the disease is well developed, you will find the exanthem on the hands most likely, possibly on the backs of the feet, or back of the neck, and along with it stomatitis and perhaps some diarrhea. The knee-jerks are exaggerated. Perhaps there are some vague pains, vertigo and muscular weakness, very marked especially in the lower extremities, and that is the type of disease you see when the affection first appears. The nervous symptoms are not so marked. When the patient passes into the second stage we come to the marked cerebrospinal disturbances. In the first stage stomatitis is quite frequent. It occurs in the springtime. The tongue of the patient is usually bright red in color and frequently coated heavily. We have noticed in several sections of the country the strawberry tongue, the papillæ being prominent, but sometimes colored black (stippled tongue). The knee-jerks are nearly always very active. Diarrhea is quite profuse, and is found, as Lombroso states, sometimes of a spasmodic type, with or without the presence of blood and mucus, being dysenteric without the presence of amebæ. This condition may last for an indefinite time. Sometimes the diarrhea will cease without treatment, and the patient remains apparently well until the next spring, when the same state of affairs will occur again. The symptoms may occur once or twice or oftener, and then the patient passes into the second stage of the disease, which is characterized by serious cerebrospinal symptoms. The motor disturbances become much more marked; there is marked muscular weakness; the gait may be slightly spastic. There may be partial paralysis; one-sided ptosis; possibly some ataxia, possibly muscular tension or tonic contraction, with tremor of the hands or retraction of the head as in meningitis, or even epileptiform convulsions. Along with these symptoms we have a number of hyperesthesias which are prominent in the disease. Patients complain bitterly of all sorts of itching and of burning sensations in the esophagus and stomach, and perhaps heaviness of the generative organs; pain in the stomach and back. These hyperesthesias sometimes become so intolerable that these patients commit suicide. Suicide is not infrequent among this class of people. They complain of

shooting pains around the body, of a neuralgic type. The patellar tendon reflexes are increased or may be diminished, or absolutely lost. The Babinski reflex occurs occasionally, and Kernig's sign may occur in this stage of the disease. There are some disturbances of the organs of special sense. We may have weakness of vision, night-blindness, photophobia; marked conjunctivitis is often noticeable. One pupil may be dilated more than the other. The ophthalmoscope reveals nothing of great consequence. There may be blepharitis. We may have vasomotor disturbances. We may have pallor of the skin and later dilatation of the capillaries; redness of the face and nose, or seborrhea on the face is not unusual. In this stage you get also psychic disorders which I will not enter into. Among the general symptoms there is lack of temperature in this disease, except in certain stages, which I will describe later; you often have slight elevation of temperature. The pulse shows nothing characteristic. The gums may be scorbutic in type or may not. In children there is retarded development. The gastric juice in pellagrins shows diminished hydrochloric acid, as reported by many observers, which is a point of some importance in the differential diagnosis. The blood of pellagrins shows nothing very characteristic, except that there is said to be a relative increase in large lymphocytes. In consequence of the digestive disturbances the patient finally passes to the last stage or the stage of cachexia. Marasmus increases; diarrhea becomes more profuse; the patient gets weaker and weaker, and may become paralytic or paretic. In this condition bed-sores may develop, as they do in almost all exhausting states, and dropsy follows, or some intercurrent disease frequently ensues, and closes the scene. Many observers say that there are two sets of symptoms, namely, the spasmodic on one side and the paralytic on the other. Pellagrous erythema is one symptom that is very characteristic, and which I will speak of in connection with the exhibition of the slides. We have also what is known as pseudo-pellagra. This word was first introduced by Roussel to describe certain cases which he did not regard as pellagra.

Landouzy and others had reported cases of pellagra among the insane who had not eaten corn, but this, in Roussel's opinion, was not true pellagra and he called such cases "pseudo-pellagra." It was unfortunate that this word was introduced into the literature, for it has caused much confusion. Of course, borderline cases have been found and are difficult of diagnosis. For instance, in insane asylums we find many types of the disease difficult of diagnosis, and there is a tendency on part of the members of the medical profession in this country perhaps to diagnose pellagra too frequently than otherwise. It is a matter which requires caution in my opinion. There is a form of well-marked acute pellagra, which is called typhoid pellagra. It is not acute from the beginning, and occurs only in the chronic cases. For instance, patients who have had the disease for three or four years, without any particular reason will have an intensification of all the symptoms, become tetanic, and die in ten days. These patients run a high temperature; they become very spasmodic; they have a low muttering delirium and may be unconscious, and are usually carried

off by some intercurrent pulmonary disturbance. It is the most acute type that is known.

There seems to be some confusion among psychiatrists in their classification of the psychosis of pellagra. This is probably due to the fact that most authors use the old terminology. In the literature reference is frequent to melancholia, for example, but the modern idea of melancholia is quite a different thing from what is usually described by writers on pellagra. The general character of the psychosis among these patients is one of depression and retardation, and the psychosis could probably be called toxic. There are two states so frequent that they have become classic: sitophobia and hydromania. The former of these consists in a refusal of food with perhaps mutism. In the latter there is usually a so-called passion for water or occasionally a repugnance for it. Suicide by drowning is not uncommon among pellagrins.

There is seen occasionally a neurasthenic type of pellagra. I have seen cases that were diagnosed and treated for neurasthenia for a year before the characteristic exanthem appeared and showed what the disease was.

As to the duration of the disease, it may last only a few months, or it may continue off and on for twenty-five or thirty years. The first stage of the disease, or even the second, may last for an indefinite time. There is no limit to be set for it.

DIAGNOSIS.

The diagnosis will rest upon the lights and shadows of the clinical picture. There is nothing pathognomonic. It seems rather queer that this disease should be of interest to the surgeon, yet it is a part of so many gastric and pelvic conditions, which may deceive the surgeon, and such patients may be submitted to unnecessary surgical operations. There are many such cases on record.

Among the diseases from which pellagra should be differentiated, there are two or three quite similar affections, and among them ergotism, which bears a close relation to pellagra in its exterior etiology. There are two other diseases in which pellagra does not bear such a close relation, and they are lathyrism and acrodynia. Many men have spoken of scurvy, leprosy and beriberi, all three of which should be easily differentiated from pellagra.

Among the skin lesions dermatologists speak of eczema, lichen and exfoliative dermatitis. In some cases mercurial and arsenical poisoning may simulate pellagra; also some of the functional neuroses. Again, dementia paralytica may in many respects simulate pellagra. The same may be said with regard to uremia and diabetic coma.

One disease which has attracted much attention is sprue. In its symptomatology sprue is closely related to pellagra. In sprue, there is an absence of skin manifestations; there is the early morning diarrhea; whereas in pellagra the diarrhea continues throughout the day; nevertheless many men have considered the two diseases quite closely related, and pellagra has been called sprue in this country several times.

Among the complications we find most frequently syphilis or tuberculosis and helminthiasis. Hookworms in the South and round worm are common in pellagrins, and amebæ are usually common in the cases of pellagra that have been seen in Illinois. Alcoholism is sometimes present. Malaria is a serious complication, but it has not been found frequently in the South. Some writers regard it as a serious complication, and when present adds gravity to the prognosis.

PROGNOSIS.

With regard to the prognosis there is a distinct difference between the asylum cases and those observed outside of asylums. The asylum type of the disease has a notoriously bad prognosis, and most of the patients die. The cases outside of asylums do much better on treatment. The earlier the diagnosis is made, the more successful the treatment, in my experience. I might mention several facts of importance in connection with the prognosis of the disease. Fever, for instance; if the case runs a temperature, the outlook is unfavorable from the standpoint of prognosis. If patients run a temperature over 100.5 or 101 F., they do badly. It is usually a signal of impending danger. The erythema which accompanies the disease is usually regarded by the older writers as having no relation with the prognosis whatever. For instance, Strambio held such a view, but our experience in this country has been that those patients who develop the wet type of erythema, with the formation of bullæ, frequently die. I understand that in Illinois there have been only a few cases of wet erythema, but in the South there are a great many. The complications play an important part in the prognosis. Recurrence should be looked for every season, and sometimes recurrences take place in the same season. I have known patients to pass recurrence in the spring, but in the fall have a recurrence which would prove fatal. Mental involvement adds to the gravity of the disease; and the diarrhea and emaciation end fatally.

TREATMENT.

With regard to treatment, let me say a few words, then I will show the slides. The treatment of pellagra should be divided into the preventive and medical treatment. With regard to the preventive treatment, again the subject of corn comes up. Our experience has been so limited that we must follow in the footsteps of those who have held to the corn theory until we have had a wider experience. Perhaps no government has worked so hard as Italy. She has tried everything and has struggled for many years without any great show of success until within the last few years, when they claim that they have been able to reduce the number of cases and the intensity of the disease. In doing this they have devoted their entire efforts to spoiled corn. They have made censuses of the disease, and have required reports of every case. They have established drying stations for the purpose of drying corn, so that it will not spoil. They have established economic kitchens, where the poor may buy good food at a cheap price, to prevent them from eating polenta. They have established sanitary stations, where the poor are

taken in every spring and treated and carried through the season. They have established exchange stations where poor corn may be taken and good meal obtained in place of it. They have established a system of education in regard to the caring for corn, and the harvesting of corn, as well as pointing out the dangers of bad corn. School children are taught the dangers of bad corn with the aid of pictures, and they have established a pellagralogic commission for each province of Italy, and an agricultural commission, and they are indefatigable in their propaganda against bad corn, in trying to teach the people to take proper care of the corn and to live on a varied diet. As a result of this, they have reduced the number of pellagrins from 100,000 to about 50,000. It is the opinion of most observers that they certainly have reduced pellagra in Italy, as the result of their efforts directed along the line I have indicated. Conclusions, however, are difficult to draw. At the same time, while they have adopted all these methods, there has been a proportionate rise in general prosperity all over Italy, and poor people are getting better food and a more varied diet than ever before, which makes a difference with a disease like pellagra. Pellagra, wherever it has appeared, has been regarded as a serious matter. It is perhaps not so serious numerically as some other preventable diseases, but it is a disease which seems to affect the poor particularly, the laboring classes, which are to a certain extent the backbone of the nation, and without killing so many it fills up the insane asylums and renders the afflicted unfit for work, and is a constant menace to the integrity of the peasant class of the people.

With regard to the medical treatment of pellagra, it is largely symptomatic and not very satisfactory. Lombroso introduced two remedies in the treatment of pellagra which have attracted much attention. First of all, he laid great stress on diet in treating pellagrins, and advised that they be fed more particularly with meat regardless of the diarrhea. He also introduced the use of arsenic and ordinary common salt. He gave Fowler's solution, and gave salt to children in the form of salt baths or rubs, and claimed to have obtained good results. Following his ideas, particularly in late years, since the appearance of atoxyl and soamin, these patients have been watched closely to see what effect these agents would have. Roumanian observers claim excellent results, but nobody else can duplicate them. I have used atoxyl and soamin in large and small doses, and continuously, or, as one gentleman put it, "Internally, externally and eternally," and I have seen very little benefit from them in asylum cases. Although in outside cases, I have seen much improvement, whether *post hoc* or *propter hoc*, I am not prepared to say. They show improvement not infrequently under hygienic treatment, without atoxyl. Dr. Babcock deliberately pushed atoxyl to the extreme limit in three cases in which it produced optic atrophy. It was given in large doses. He got three cases of blindness among a large number of patients. The ophthalmologist who examined these patients said he doubted very much whether the blindness could be attributed to the large doses of atoxyl. In administering the atoxyl he gave one-half gram on one day and repeated it the second day thereafter, making a gram in three days,

then a rest for ten days, and so repeating this double dose indefinitely. Arsacetin was introduced by Ehrlich and is a salt which will withstand boiling. Baths of various kinds, hypnotics, anodynes and bismuth for diarrhea have been given in pellagra, some of these agents doing some good. Local dressings for the hands have been applied.

There is one further feature in the treatment of pellagra worth mentioning, and that is the transfusion of blood by Crile's method, which was first done by Dr. Cole, of Mobile, Ala. He has transfused nine cases of pellagra, with six recoveries. At first, he used the blood from a recovered pellagrin for his donor, but afterward used the blood of any healthy ordinary individual, and seems to have obtained just as good results. The operation is not very difficult, if you are not dealing with insane patients, but it is difficult among patients who do not cooperate. Cole has brought out the value of this surgical principle in certain cases, but it is not a treatment that can be applied generally to an epidemic disease. Lastly, pellagra is a public health problem, and promises to be of larger importance. Great interest is being taken in the subject at the present time, and it is a disease that demands the very best thought and work of the American medical man.

PELLAGRA.*

W. J. MacNeal, M.D.

Assistant Chief in Bacteriology in the Laboratory of Physiological Chemistry, University of Illinois.

URBANA, ILL.

Introduction.—During the spring of 1909, Dr. C. F. Williams, Secretary of the State Board of Health of South Carolina, sent a letter of inquiry about pellagra to the superintendents of the State Insane Hospitals of the country. These letters came to the attention of the Illinois superintendents during July and August, and served to direct their attention to the possible presence of pellagra in the institutions under their charge, and cases of the disease were soon found, first at Dunning and later at the Peoria and Kankakee hospitals. This recognition of the disease in the state institutions has produced somewhat of a sensation because of the current statements in our books that pellagra is a disease due to eating spoiled corn, and that it is unknown in the United States; and the presence of the disease might therefore imply improper conduct of our state hospitals. Even on more sober reflection, the interest in pellagra has still been sustained, because it was soon recognized that the disease is already widespread throughout the southern states, and present here and there throughout the rest of the country, that it is likely to become more prevalent, that there are no known effective methods of restricting its advance, or of stamping it out, and that its causation is by no means settled. Another reason why Illinois is especially interested rests upon the fact that we are the greatest corn-producing commonwealth in the

* An address delivered at an assembly of the College of Science, University of Illinois, Dec. 2, 1909.

world, and the reputation of Illinois corn as a wholesome food is of some commercial importance.

What, then, is pellagra? The descriptions of the disease accessible to the average American physician previous to 1909 were indeed few. Since its recognition here the South Carolina State Board of Health, the United States Public Health and Marine-Hospital Service and various southern physicians and others have published a considerable amount of literature giving the present state of the world's knowledge of pellagra. It is largely from these sources that I have drawn the ideas I shall present to you this afternoon.

History and Present Extent of Pellagra.—The first authentic account of the disease we now call pellagra was given by Gaspar Casal in 1762. He had studied the disease in Spain, where he observed cases as early as 1735. From the characteristic changes in the skin, Casal named the disease "mal de la rosa," and considered it a kind of leprosy. In Italy the disease seems to have made its appearance about 1750 and was first described there in 1771 by Frapolli of Milan, who gave it the name pellagra (Italian, *pelle,* skin, and *agra,* rough). In France it was first recognized in 1818, in Roumania in 1833, and in the Island of Corfu in 1839; more recently in Austria, Turkey, Greece and Poland. In Africa the disease was first recognized by Pruner in 1847, and recently, Sandwith has shown that pellagra is very prevalent in lower Egypt. He also found cases in South Africa. It has been reported from India, Brazil, Mexico, the Argentine Republic and the West Indies. At present it is most prevalent in Italy, where there are about 100,000 recognized cases, and in certain parts of Egypt, where Sandwith examined the peasants at work in the fields and found from 15 to 62 per cent. of them afflicted with this disease.

In the United States two cases of probable pellagra were reported in 1864 by Dr. Gray, of Utica, N. Y., and Dr. Tyler, of Somerville, Mass. In 1902, Dr. Sherwell recognized a case in a sailor aboard ship in New York, and in the same year Dr. H. F. Harris, of Atlanta, Ga., reported one case presenting the classic symptoms of the disease, and thought it possibly true pellagra. Searcy,[1] in 1907, described an epidemic of pellagra in the Alabama Hospital for the Colored Insane, in which there were 88 cases with 57 deaths. He states that a few cases of the unrecognized disease had existed in the hospital as far back as 1901. In the same year, the staff of the South Carolina Hospital for the Insane at Columbia made a report to the State Board of Health concerning pellagra in South Carolina, and in 1908 the American disease was definitely identified with the pellagra of Europe by Dr. J. W. Babcock and Dr. J. J. Watson, of Columbia, S. C., who made a visit to Italy to study the disease there. A local conference on pellagra was held at Columbia, S. C., in November, 1908, and in October of this year a second conference, which assumed a national character, was held at the same place. The presence of the disease was reported in all the southern states and in several of the northern states, most prominent among which, from the standpoint

1. Jour. Am. Med. Assn., 1907, xlix, 37.

of the number of cases, was Illinois. A National Association for the Study of Pellagra was organized, and this organization will meet at Peoria, Ill., in June, 1910. It seems probable that pellagra has existed unrecognized in South Carolina, North Carolina and Georgia for twenty or thirty years. This is the opinion of the asylum authorities. In Illinois, Dr. Zeller is certain of its presence for at least two years, and believes it to have existed in the Peoria Hospital for seven years. The recent apparent extension of the disease is then partly due to the recognition of cases already existing, but besides this, there is an actual real increase in the number of pellagrins in the last few years, and many students of the disease expect a further spread in the near future.

Symptomatology and Diagnosis.—The failure to recognize pellagra is not so remarkable, for it is a disease presenting various symptoms. Indeed, some observers would deny that pellagra is a pathologic entity, and consider its symptoms as due to several unrelated causes. Most cases, however, conform more or less to a fairly definite type. The premonitory or prodromal symptoms are mild and not characteristic. There is usually some digestive disturbance, loss of appetite, burning sensation in stomach, and most frequently some diarrhea, accompanied by inflammation of the mouth and salivation. Soon afterward there is a disinclination to exertion. The victim dreads his ordinary duties, and procrastination takes the place of former promptness. He becomes negligent of his personal appearance. These are signs of the psychic depression which later forms so prominent a feature of the disease.

After some time, varying from a few weeks to several months, during which the diarrhea and attendant inflammation of the mouth may persist, the skin lesions appear. The eruption first appears as a dry erythema on the backs of the hands, extending up the forearm to the lower border of the shirt sleeve. In the vast majority of cases it appears first in the springtime and frequently after exposure to sunlight. Indeed, the disease has been called "Vernal Insolation," and many of the American cases have at first been mistaken for sunburns. The erythema appears also upon the face, the neck, and upon the feet and ankles, although less frequently. It is symmetrical in distribution, selecting particularly the extensor surfaces, not covered by clothing. Later the flexor surfaces may be involved, but as a rule the palms of the hands and the soles of the feet remain unaffected. Cases with universal eruption have, however, been described. There is first a reddening of the skin with some edema; after a few days blisters may form. The eruption then dries and small grayish scales form and fall off. The skin remains pigmented, a brownish or plum color. Repeated attacks of this erythema occur during the summer and the skin may become much thickened, cracked and fissured. With the approach of winter the manifestations of the disease subside and the patient may consider himself cured, but the eruption appears again the next spring, with the associated digestive disturbances.

The skin eruption is the most characteristic thing about pellagra, without which it is practically impossible to be certain of the diagnosis. The eruption appears on the exposed parts, is symmetrical in distribution

and leaves a peculiar pigmentation on the skin. It is usually painless, only a slight itching or burning sensation being present. In fact, the patients are more disturbed by the unsightly appearance than anything else.

Evidences of involvement of the nervous system usually appear early in the course of the disease, such as the fairly constant exaggerated knee-jerk and a mild grade of melancholia. Later on, delusions occur, and there is sometimes a tendency to suicide, especially by drowning. In Italy about 10 per cent. of the cases become insane. As the disease advances the patients talk less and less and finally may become absolutely mute.

In uncomplicated cases there is as a rule no fever, although in some rapidly fatal cases a temperature of 106 to 107 has been observed. The blood changes are those of a moderate secondary anemia, with possibly a slight relative increase in the large mononuclear cells.[2]

The Recognition or Diagnosis of pellagra rests upon: (1) Diarrhea; (2) inflammation of the mouth with salivation; (3) skin eruption; and in some cases is confirmed by (4) nervous manifestations. For the purpose of treatment it is very important that the physician should recognize the nature of the disease before the skin lesions appear, but Dr. Lavinder maintains that such diagnosis cannot be made with scientific accuracy. In insane hospitals, where observation of many cases has made the attendants familiar with the disease, it is often recognized and a provisional diagnosis made upon the digestive disturbances alone. This cannot be done with safety by those not thoroughly familiar with the disease.

In the differential diagnosis of the skin lesions, sunburn, scalds and syphilis may cause confusion. The symmetry, selective distribution and color of the eruption characterize it.

Course of the Disease.—The progress of pellagra is exceedingly variable, as some die in the first acute attack, while others survive recurrences for twenty years, with only moderate deterioration of mind and body. In general, the progress is gradual, increasing with each recurrence, toward mental and physical inefficiency, progressive wasting and death in extreme cachexia, unless an intercurrent infection ends the patient's life before that stage is reached. In children the progress of the disease is usually more rapid. Of great economic importance is the fact that pellagrins become incapable of caring for themselves long before their death, so that the community is frequently burdened with caring for them.

Complications.—The complications of pellagra are numerous and varied, for it is a disease of the poorer classes and they are likely to have other diseases also. Of particular interest is its frequent association with the presence of animal parasites. Thus in Egypt, according to Warnock, nearly every pellagrin suffers from bilharzia disease and many of them from ankylostoma also. In the southern United States the hookworm is generally found in pellagrins, and in some places, as, for example,

2. At this point a number of lantern slides were shown, illustrating the various types of the skin eruption and the several stages of the disease.

at Peoria, intestinal amebæ are present in a large proportion of the cases. It is generally supposed that the disease pellagra predisposes to infection with these parasites, but some of the observed symptoms, such as the anemia and emaciation may be, in part, caused by them.

Pathologic Anatomy.—The pathologic anatomy of pellagra is obscure because the material available for post-mortem examination has consisted for the most part of chronic cases, unsatisfactory on account of intercurrent infections and senile changes. There is general atrophy of the parenchymatous organs, wasting of the adipose and muscular tissues and brittleness of the bones. In the spinal cord the changes are fairly constant and important; degenerations of the lateral columns in the dorsal region and of the posterior columns in the dorsal and cervical regions. The skin changes consist of congestion, then thickening and pigmentation, and finally atrophic thinning. In the intestine, besides atrophic thinning of the wall, ulcers also occur. Whether these ulcers are in every case lesions of pellagra or due to complications of the disease (ameba, ankylostoma), is not entirely certain.

Etiology.—The question of the causation of pellagra is a most interesting one, and although there are many theories about its causation, no one of them has been clearly worked out and proved. It has been considered a modified leprosy; it has been ascribed to sunshine, poverty, insanitary dwellings, syphilis, irritant oils, bad water, alcohol, garlic, onions and corn (Sambon).

In 1810 Marzari first called attention to the relation between maize and pellagra. In 1845 Ballardini ascribed the disease to a mold, *sporisorium maydis,* which he found in the greenish discoloration so frequently seen in the germ groove of corn (maize) grains. With this fungus he produced diarrhea in man, and loss of feathers and general wasting in fowls. A special commission appointed to test Ballardini's discovery made an unfavorable report, chiefly because the same mold was often found on corn where pellagra was unknown. The same objection may be raised to the acceptance of all the other various micro-organisms of corn to which pellagra has from time to time been ascribed, such as the *penicillium glaucum* incriminated by Lombroso and maize smut (*ustilago maydis*) incriminated by Pari. The study of the micro-organisms of corn has been diligently pursued by a long list of investigators, and many of them have isolated different species, with cultures of which they claim to have produced pellagra in animals or in man. The peculiar nature of pellagra, its symptoms and anatomic lesions, as well as its epidemiology, show clearly that its cause must always be the same specific thing, and not any one or several of the various molds and bacteria which these various investigators have obtained from corn. Not much reliance can be placed, therefore, on the work which has been done in this field.

In 1871 Lombroso, the renowned Italian physician, sociologist and criminologist, who died a few weeks ago, carried out experimental investigations which are the basis of the present Italian theories of pellagra. He showed that certain poisonous substances are produced in the parenchyma of decomposing corn through the activity of saprophytic micro-

organisms, and he was able to separate these poisons, obtaining a toxic watery extract, a toxic alcoholic extract and a poisonous red oil. By means of these substances he produced symptoms in man and animals which were considered characteristic of pellagra; in man, vomiting and diarrhea, scaling of the skin, malnutrition; in fowls, diarrhea, loss of feathers and death; in rats, wasting, convulsions and death. It is to be noted that the micro-organisms producing these poisons in the corn proved harmless in themselves when injected into or fed to animals.

Against these experiments it has been shown that similar poisons may be obtained in the same way from wheat and other cereals, and in 1881 Monselice collected damaged maize from pellagra districts, but was unable to obtain any poisonous alkaloid from it. He remarks that artificially fermented maize and ordinary damaged maize are two very different things.

Pellagra is a disease which is characteristic only in its entire clinical picture. The production of diarrhea, loss of hair or of feathers, emaciation and death, is not the production of pellagra, and the micro-organisms or chemical poisons which produce these results may or may not have anything to do with pellagra. The proof is still lacking. Still, since the days of Ballardini, the causal relation of fermented corn to pellagra has been the most generally accepted theory.

This relation has been summed up in a recent paper by Sandwith, the English authority, as follows: "1. In districts where no maize is cultivated or habitually eaten, pellagra does not exist. 2. There are many districts where maize has been cultivated for many years and yet pellagra has not appeared. 3. Well-to-do people in pellagra districts, living on a varied diet and consuming maize as an occasional and not as a staple cereal, usually escape pellagra. 4. It is not good maize or good maize flour which produces pellagra; the disease requires for its production the habitual use of damaged maize in some form. Many Italian investigators regard *penicillium glaucum* as the specific poison-producing agent."

Accepting the causal relation of corn to the disease, there are various possible explanations of its mode of action, all requiring the presence of undetermined micro-organisms. 1. Pellagra may be due to chemical poisons formed in the fermentation of the corn, these poisons being absorbed after ingestion of the corn and producing the symptoms of the disease. It is well known that fermentation of various grains will produce such chemical poisons, alcohol, for example. 2. The disease may be caused by a parasitic fungus of the corn whose very substance is poisonous, such as, for example, ergot. 3. It may be that the corn introduces into the digestive tract some micro-organism which establishes itself there and produces poisons which are absorbed. These suppositions do not, by any means, exhaust the possibilities of the case, but in the absence of exact knowledge further speculations are useless.

Although the dependence of pellagra upon use of maize as a food is quite generally accepted, it is not established by conclusive evidence, and some careful students of the disease regard this maize theory as erron-

eous. Dr. L. W. Sambon,[3] of Naples, in a lecture at the London School of Tropical Medicine, has reviewed the evidence from this point of view. He shows that the common belief that Indian corn and pellagra were both introduced into Europe from South America, rests upon very insecure evidence, and that in fact, Frapolli himself believed pellagra to be a disease of great antiquity. Again, Manson, the great English authority on tropical diseases, says: "The disease is pellagra when it fits in with the orthodox theory and when it can be connected in any way with maize; but when this is not possible, the disease becomes pseudo-pellagra." Recently Warnock has shown that in the Insane Hospital at Cairo, Egypt, where the diet is absolutely free from corn in any form, still insane patients who have lived in the hospital for years without any symptoms of pellagra, develop the disease there and sometimes die of it. In general, it may be said that the present opponents of the "maize theory" regard pellagra as an infectious disease caused by an unknown specific parasite, probably communicable in an indirect way.

The history of pellagra in the United States is hard to account for upon the zeitoxic theory of Lombroso. For what is the cause of the present spread of pellagra here, and why have we not had the disease before? Corn has been a staple article of diet in the South for a long time and for the negro slaves it was the principal food. In the years following the Civil War the South has certainly had its share of poverty, and corn of a poor grade must have been consumed there very frequently by the whites as well as by the negroes. The absence of pellagra from the United States has presented an interesting problem to foreign students of the disease and the explanation offered by them has been this: "The word poverty represents no condition in America which can compare with the misery of the impoverished peasants in Italy, Roumania and Egypt" (Sandwith). It is remarkable that now, just as the South is in the midst of an industrial and commercial reawakening, the disease should appear there, attacking not only the very poor, but also those of moderate financial means. We may assume that the disease has existed in this country for decades, and indeed some competent observers have seen cases several years ago, unrecognized at the time. But such cases cannot have been very numerous or some one would certainly have reported them. We are forced, then, to search for some factor, introduced into the United States in recent times, to explain the present spread of pellagra.

The methods of harvesting and marketing the corn crop have undergone a change in recent years, the grain now being harvested earlier, sometimes shelled before it is well dried and then stored in elevators, where it is tightly packed and liable to ferment. This may have an important relation to the recent spread of pellagra, and some of our southern fellow-countrymen think that this applies particularly to the maize of the corn belt. Another assumption which would serve to explain the present spread of the disease is that pellagra is due to a definite specific micro-organism which finds in corn a medium for its propagation

3. Brit. Med. Jour., 1905, II, 1272-1275.

and transmission; that not all fermented corn, but only that containing this germ is likely to produce pellagra, and that we have eaten fermented corn with impunity until this specific cause was introduced from abroad and scattered over the country. This assumption offers many interesting possibilities, but there is no scientific evidence to support it. The uncertainty in the minds of American physicians in respect to this question is expressed by the resolutions of the recent National Conference on Pellagra:

"*Resolved*, That, while sound corn is in no way connected with pellagra, evidences of the relation between the use of spoiled corn and the prevalence of pellagra seem so apparent that we advise the continued and systematic study of the subject, and in the meantime, we commend to corn growers the great importance of fully maturing corn on the stalk before cutting same."

Government and state inspection of corn-food products was also recommended.

Prognosis.—The outlook in pellagra is always serious, but if the disease is recognized early in its course, before mental and physical deterioration has appreciably progressed, recovery may be secured in the majority of cases. In later stages the arrest of the disease is more difficult and permanent impairment of the faculties remains. After marked emaciation has occurred, death is the rule. The high mortality rate reported in the American cases is in part due to the fact that these are for the most part patients in a late stage of the disease when first recognized. Patients who have apparently recovered from pellagra may again come down with an acute attack after many years.

Treatment.—Diet is of primary importance in the treatment. Corn and all corn products should be rigidly excluded. Cases progressing favorably may relapse at once after eating perfectly good corn products. The food should consist largely of milk, eggs and meat, in liberal amount. Among drugs, arsenic, as Fowler's solution or as atoxyl, appears beneficial in some cases. For the dry skin lesions, no treatment is of special benefit. A bland ointment, such as zinc oxid, may be used. For moist lesions and ulcerations, appropriate dressings should be applied. Treatment is often disappointing, and too much should not be expected from forced feeding, for in some hospitals cases develop in the tuberculosis wards while taking the highly nutritious diet for this disease.

Prophylaxis.—The restriction and prevention of pellagra must rest upon knowledge of its causation; otherwise our efforts at prevention are mere stabs in the dark. This principle is well illustrated by the present efficiency in prevention of yellow fever as compared with the futile efforts of the last century, as was so clearly pointed out to you by Professor Burrill a few moments ago. In pellagra, the knowledge that we have points to maize as a factor in causation, and to prevent pellagra it should only be necessary to stop eating maize, and above all, damaged maize. The proper inspection of corn food products should prevent the use of the latter for human food. In Italy, where the government has undertaken the prevention of pellagra on a large scale, they are proceeding upon this plan. The disease has not been stamped out, as yet,

although the total number of cases appears to be decreasing. On the other hand, the disease seems to be spreading slowly to new parts of the country, so that the total pellagrous area is increasing in extent. Sambon regards the present Italian program for the control of pellagra as wholly ineffective.

Dr. C. H. Lavinder,[4] of the United States Public Health and Marine-Hospital Service, discusses, in a recent paper, the prevention of pellagra, and considers fully the question of quarantine which has been raised in some parts of the country. Although we do not know all about the causation of pellagra, it is very certain that it is not readily transmitted from man to man. This is the experience of the whole world. If it is a poisoning by spoiled corn, quarantine is, of course, utter foolishness. Even if pellagra is a true infection, the mode of its transmission is wholly unknown, and effective quarantine is therefore impossible. There is, then, no reason for attempting a segregation or quarantine of this disease in the present state of our knowledge.

The question of communicability and quarantine in pellagra has been raised by Dr. J. M. King and his colleagues at Nashville, Tenn., and it is only fair to present the scientific observations which prompted them to raise the question. Dr. King observed at Nashville two groups of cases. One group at the Baptist Orphanage consisted of 17 cases. The other group consisted of two cases occurring 14 miles in the country, and he also reported one single case. There appears to be no doubt that these were true pellagra, the diagnosis having been confirmed by Dr. Lavinder. Greatest interest centers in the group of cases in the Baptist Orphanage. Near Nashville there are three state charitable institutions, one county institution and this Baptist Orphanage. The number of inmates in the last named is about 75, in the others much larger. All these institutions use the same dietary and the same quality of foods. No other institution, except the Orphanage, had any cases of pellagra, although most careful search was made for them. The evidence shows that the disease was introduced into the Orphanage by four children from a destitute family, the youngest child being affected upon admission. The three other children became affected later and thirteen other cases developed in the Orphanage, in children coming from various parts of the state. Every evidence indicates that they contracted the disease in the Orphanage. From these observations, Dr. King considers that the disease appears to be infectious or in some unknown way communicable. He does not, however, advocate quarantine, and this is certainly not justified by our present knowledge of pellagra.

In conclusion, let me say that the recognition of pellagra in this country has aroused the attention of the whole world, and Europe is hopefully looking to the United States for a solution of the pellagra problem. Let us hope that Illinois may do her part.

4. Public Health Reports, Oct. 29, 1909.

ILLINOIS MEDICAL JOURNAL

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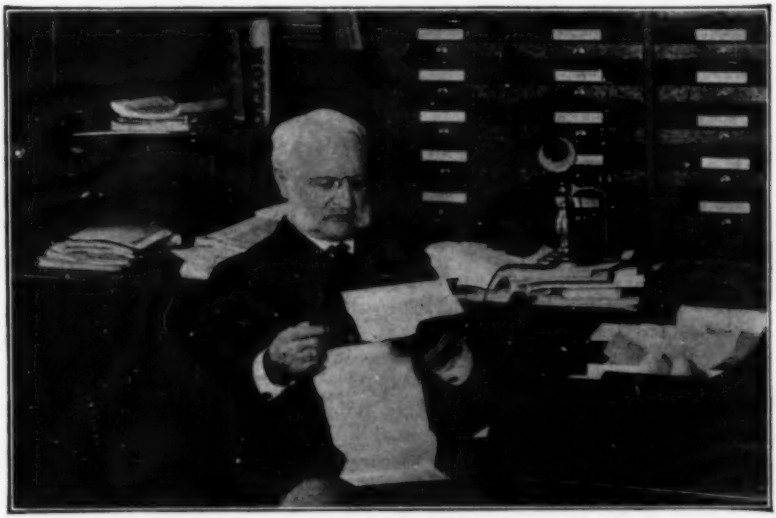
JANUARY, 1910.

DR. FRANK W. REILLY.

Dr. Reilly, for many years Assistant Commissioner of Health of Chicago, and who is largely responsible for the success in solving that city's water and sanitation problems, died at his residence, 745 Lincoln Boulevard, Dec. 16, 1909. Dr. Reilly had been ailing for more than a year, and was nearly 74 years old. He was born in Bolton, England, but was brought to this country in childhood and was educated in the public schools of Philadelphia. He graduated from the Chicago Medical College in 1861. He enlisted as volunteer surgeon and was later promoted to the surgeonship of the Twenty-sixth Illinois Infantry, with the rank of major.

At the close of the war, Dr. Reilly returned to Chicago, and in April, 1867, was appointed Sanitary Inspector. In this position he became associated with Dr. J. H. Rauch, and this intimacy was only terminated by the death of Dr. Rauch. He served from 1873 to 1879 in the Marine-Hospital and Sanitary Service of the then National Board of Health. In 1881 he returned to Illinois and for some years resided in Springfield as Assistant Secretary of the State Board of Health. A great deal of the success of Dr. Rauch's administration as Secretary of

the State Board of Health was due to Dr. Reilly. During the smallpox epidemic of 1882-1883 Dr. Reilly did herculean service under Dr. Rauch's direction. In 1894 he again entered the service of the Chicago Health Department, and continued to be associated with that department until his death, being appointed Assistant Commissioner in 1895. "His appointment marks the beginning of efficient administration of sanitary affairs in that city. His thorough knowledge of medicine—especially preventive medicine—his keen sense of its application, his force and enthusiasm and his evidently unselfish devotion to the service was an inspiration and stimulus to his co-workers. His work, never spectacular, always forceful and effective, has contributed most to the reputation and high standing that the Chicago Department of Health now



DR. FRANK W. REILLY—"CHICAGO'S MOST USEFUL CITIZEN."
DISCOVERER OF THE VALUE OF A HEALTH "STORY."

COURTESY OF THE BULLETIN, CHICAGO DEPARTMENT OF HEALTH.

enjoys in the sanitary world. Dr. Reilly was the first to conceive the idea of publishing a weekly health bulletin which should contain a review of the city's health and drive home a simple lesson in the prevention of unnecessary sickness and death. As an educative factor, this *Bulletin* has received signal recognition throughout the English-speaking world. To Dr. Reilly belongs the credit."

The newspapers of Chicago almost without exception pronounced Dr. Reilly "Chicago's Most Useful Citizen."

The various Commissioners of Health under whom Dr. Reilly served united in expressions of appreciation of his work in the *Bulletin* of Dec. 18, 1909.

Finally, we will say that Dr. Reilly was appointed Secretary of the State Board of Health in 1897 by Governor Tanner, with the understanding that the Board was to be taken out of politics and prominent citizens and physicians of high character and attainments were to compose the Board. It is a matter of tradition that Dr. Reilly was on his way to the depot to take the train to Springfield when he saw by the evening papers that Governor Tanner had failed to carry out the stipulation regarding the members of the Board promised to Dr. Reilly. Dr. Reilly at once returned to his home and dictated his resignation. What would have been the history of the Board had this unfortunate mistake of Governor Tanner not been made, we can only imagine. We can be sure, however, that the Board would at least have continued to maintain the high position given it during the administration of Dr. Rauch.

RECIPROCITY BETWEEN JOURNALS OF THE STATE MEDICAL SOCIETIES.

From time to time we have called attention to the fact that nearly all of the state medical societies of the Union have adopted THE JOURNAL idea instead of the yearly volume of transactions, and frequently have called attention to the valuable contents of the various state journals. We believe there is still a great opportunity for development of the state journals along the lines of reciprocity between the various organizations. With this object in view, we have addressed the following letter to the various editors of the state medical society journals, and have received answers from a number of them, at least five endorsing the idea and others holding it in abeyance until the officers of the organization could be consulted in regard to the matter.

We now bring this subject to the attention of our readers in the hope that many of them will be interested in taking it up, and believe that with proper encouragement this feature can be made a distinct success and of value both to THE JOURNAL and the subscriber.

Many of our members reside along the borders of the state of Indiana, and to them the *Indiana Medical Journal* at the remarkably low price of $1 per annum would appeal, because they are interested in the doings of their Indiana brethren, know many of them personally and are in the habit of visiting back and forth with the brethren of that state. One of our most important societies, the Æsculapian Society of the Wabash Valley, has as many members in Indiana as in Illinois, and this idea of reciprocity should particularly appeal to them.

The same might be said regarding the practitioners residing along the borders of Wisconsin, Iowa, Missouri and Kentucky. The *Ohio State Journal* will appeal to the many graduates of the Ohio schools residing in this state, and also because the productions of such men as Ransohoff of Cincinnati, Baldwin of Columbus and Crile of Cleveland will be found in the columns of the Ohio journal.

The *Minnesota State Journal* contains many articles from the Mayo clinics of Rochester, and is well worth the cost of the annual subscrip-

tion. St. Louis is the medical center for a large portion of southern Illinois, and these members would undoubtedly be interested especially in the Missouri journal. The California journal is one of the most independent and attractive journals published. The Texas journal is clean and newsy, and will appeal to many of our readers interested in medical conditions in that vast empire. Probably every other state journal would appeal to some member of our Society.

On the other hand, the ILLINOIS MEDICAL JOURNAL, with its numerous pages (from 1,600 to 2,000 annually) of original articles and society reports, should appeal not only to our neighbors, but to many society members in all parts of the country. Chicago being now one of the greatest, if not the greatest, medical center in America, issues annually from her clinics and medical schools matter of the very highest importance to the medical profession, much of which can only be obtained from the columns of the ILLINOIS MEDICAL JOURNAL. Every month the editorial office receives demands for copies of THE JOURNAL from all parts of the United States, and even from Europe. There would seem to be no reason why our circulation should not be doubled.

We would like to have our members consider this project seriously and give it all the support possible.

My Dear Doctor:

I have had in mind for some time to propose a sort of reciprocity between the journals of the different state medical societies, and after talking with the chairman of our publication committee have decided to write you concerning the matter.

It seems probable that many members of each state medical society would profit by reading the issues of the journals of the other state societies and would be likely to become subscribers to one or more of these journals, if they were permitted to subscribe on the same terms as the members of the particular state society issuing the journal, and with this object in view I have to propose that you bring this matter before your publication committee at the earliest possible moment, to see whether some such inducement may not be offered to the members of our society on the part of your journal, and thus you may secure a number of subscribers from our membership. On the other hand, we would offer to your membership the ILLINOIS MEDICAL JOURNAL at the price we are giving it to our own members, namely, $1.50 instead of the ordinary subscription of $2.00 charged to outsiders under the present circumstances.

I believe that this proposition will appeal to many hundreds of practitioners throughout the United States, and in this way the common interests of all journals might be very much advanced.

I think the only limitation that should be put upon such a proposition in our state would be that the journals of other states, in their advertising columns, conform to the rules laid down by the A. M. A. committee in their advertising columns.

Probably your journal conforms to these rules at this time, but if not it might be more profitable for you to drop some of the questionable advertisements for the sake of securing subscriptions from our membership.

Please let me hear from you regarding this matter at your earliest convenience, and greatly oblige,

Yours very truly,
M. D., Editor.

THE NATIONAL BUREAU OF HEALTH.

President Taft, in his last message to Congress, takes occasion to urge the formation of a National Bureau of Health by the consolidation of the Marine-Hospital Service, now under the direction of the Treasury Department, the Pure Food Commission, now under the direction of the

Department of Agriculture, and the various other departments and bureaus into one compact body which shall be known as The National Bureau of Health. The President takes occasion to say that "in the nature of things the medical department of the Army and the medical department of the Navy must be kept separate."

Of course, the medical department of the Army and Navy must be kept separate, as the President states, but there should be no reason why there should not be consolidation and the formation of a public health bureau. The only disappointment is that he does not go further and advocate a complete department devoted to this one subject, as is done in many of the European governments. However, it will be up to the bureau, should it be established, to make its importance so felt that a complete department will in a few years become a public necessity.

The facts regarding the plague situation in San Francisco should appeal as an argument for the establishment of the National Bureau of Health. State interests kept hidden for many months the fact that plague existed in San Francisco, and no serious work was undertaken for its eradication until the Marine-Hospital Service of the United States took the matter up, and very soon relief was obtained.

Thus it is in a great many parts of the country unwillingness to assume responsibility for local conditions for fear of temporary harm becomes a menace to the health of the entire nation, and the only relief will be for the United States Government to assume the burden without fear or favor.

It will now be up to the members of the medical profession to urge the importance of the matter thus initiated by President Taft, and by stimulating appeals to members of Congress secure the necessary legislation.

President Taft's language upon this subject is as follows: "For a very considerable period a movement has been gathering strength, especially among the members of the medical profession, in favor of a concentration of the instruments of the national government which have to do with the promotion of public health. In the nature of things the medical department of the Army and the medical department of the Navy must be kept separate. But there seems to be no reason why all the other bureaus and offices in the general government which have to do with the public health or subjects akin thereto should not be united in a bureau to be called the 'bureau of public health.' This would necessitate the transfer of the Marine-Hospital Service to such a bureau. I am aware that there is a wide field in respect to the public health committed to the states in which the federal government cannot exercise jurisdiction, but we have seen in the Agricultural Department the expansion into widest usefulness of a department giving attention to agriculture, when that subject is plainly one over which the states properly exercise direct jurisdiction. The opportunities offered for useful research and the spread of useful information in regard to the cultivation of the soil and the breeding of stock and the solution of many of the intricate problems in progressive agriculture have demonstrated the wisdom of establishing that

department. Similar reasons of equal force can be given for the establishment of a bureau of health that shall not only exercise the police jurisdiction of the federal government respecting quarantine, but which shall also afford an opportunity for investigation and research by competent experts into questions of health affecting the whole country or important sections thereof, questions which in the absence of federal governmental work are not likely to be promptly solved."

SECOND EDITION OF THE AMERICAN MEDICAL DIRECTORY.

The second edition of the American Medical Directory, under date of 1909, from the American Medical Association press, 535 Dearborn Ave., Chicago, has just reached us and we take pleasure in calling the attention of our readers to this valuable volume. It contains 10 per cent. more names and 20 per cent. more matter than the edition of 1907. The records of medical colleges, state boards and other sources of information have been carefully scanned to make the work complete. Two additional items have been added to the information given regarding each physician, and an attempt has been made to establish a standard by which specialists could be determined. This, while incomplete in this volume, will assist in a complete roster of specialists in a future volume. Our readers are requested to make such additions and corrections as may come to their notice in this volume, and we trust it will have a wide circulation as the only authentic record of the national organization. One criticism may not be out of place, and that is in regard to the population, which is based on an estimate of 1903 in every state and city, with the possible exception of Chicago and other larger cities. A little more effort would have obtained a fairly accurate estimate of all cities of more than 10,000 population, and especially of the states, which would have added considerable value to the volume. Outside of this, there is little to criticise in the book, which improves with each edition.

NOTICE.

TREASURY DEPARTMENT,

BUREAU OF PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE,

WASHINGTON, D. C., Dec. 2, 1909.

A board of commissioned medical officers will be convened to meet at the Bureau of Public Health and Marine-Hospital Service, 3 B Street SE., Washington, D. C., Monday, Jan. 24, 1910, at 10 o'clock a. m., for the purpose of examining candidates for admission to the grade of assistant surgeon in the Public Health and Marine-Hospital Service.

Candidates must be between 22 and 30 years of age, graduates of a reputable medical college, and must furnish testimonials from responsible persons as to their professional and moral character.

The following is the usual order of the examinations: 1, physical; 2, oral; 3, written; 4, clinical.

In addition to the physical examination, candidates are required to certify that they believe themselves free from any ailment which would disqualify them for service in any climate.

The examinations are chiefly in writing, and begin with a short autobiography of the candidate. The remainder of the written exercise consists in examination in the various branches of medicine, surgery, and hygiene.

The oral examination includes subjects of preliminary education, history, literature, and natural sciences.

The clinical examination is conducted at a hospital, and, when practicable, candidates are required to perform surgical operations on a cadaver.

Successful candidates will be numbered according to their attainments on examination, and will be commissioned in the same order as vacancies occur.

Upon appointment the young officers are, as a rule, first assigned to duty at one of the large hospitals, as at Boston, New York, New Orleans, Chicago, or San Francisco.

After four years' service, assistant surgeons are entitled to examination for promotion to the grade of passed assistant surgeon.

Promotion to the grade of surgeon is made according to seniority and after due examination as vacancies occur in that grade.

Assistant surgeons receive $1,600, passed assistant surgeons $2,000, and surgeons $2,500 a year. Officers are entitled to furnish quarters for themselves and their families, or, at stations where quarters cannot be provided, they receive commutation at the rate of thirty, forty and fifty dollars a month, according to grade.

All grades above that of assistant surgeon receive longevity pay, 10 per cent. in addition to the regular salary for every five years' service up to 40 per cent. after twenty years' service.

The tenure of office is permanent. Officers traveling under orders are allowed actual expenses.

For further information, or for invitation to appear before the board of examiners, address "Surgeon-General, Public Health and Marine-Hospital Service, Washington, D. C."

FENGER MEMORIAL ASSOCIATION.

The directors of the Fenger Memorial Association have decided to set aside $400 for 1910 to aid in medical investigation. Applications with the necessary details should be sent to the secretary, Dr. L. Hektoen, 1743 W. Harrison Street, Chicago, not later than Feb. 1, 1910. This money is derived from the Fenger Memorial Fund, which has been created by subscriptions in honor of Dr. Christian Fenger of Chicago, who died in 1902, the income of which will be used to further medical investigation.

LECTURE BUREAU ILLINOIS STATE MEDICAL SOCIETY.

Secretaries and program committees desiring lecturers should communicate directly with the Secretary of the State Medical Society and not with the individual lecturer. They should send in the request in ample time, *at least* three weeks prior to the meeting. Give date, place and probable attendance. Several names should be selected.

Address all communications to Dr. E. W. Weis, Secretary, Ottawa, Ill.

The following additional lecturers have volunteered to address the County Societies on the subjects indicated:

Medicine.—Dr. C. W. Lillie, East St. Louis, Ill.; Dr. E. W. Fiegenbaum, Edwardsville, Ill.; Dr. E. H. Butterfield, Ottawa, Ill.

Eye.—Dr. A. B. Middleton, Pontiac; Dr. George Adams, East St. Louis.

Genitourinary.—Dr. F. Kreissl, Chicago; Dr. J. S. Nagel, Chicago.

Surgery.—Dr. W. F. Newcomb, Champaign; Dr. E. W. Andrews, Chicago.

Rectum.—Dr. F. C. Vandervort, Bloomington.

Public Health and Preventive Medicine.—Dr. Henry B. Hemenway, Evanston.

Address all communications to E. W. Weis, Secretary, Ottawa, Ill.

Correspondence.

VISITS TO SURGICAL CLINICS IN ENGLAND.

NELSON M. PERCY, M.D.

Attending Surgeon to St. Mary's of Nazareth Hospital; Junior Surgeon to the Augustana Hospital; Instructor in Surgery in the Medical Department of the State University of Illinois.

CHICAGO

VISIT TO SIR VICTOR HORSLEY'S CLINIC OF LONDON.

Sir Victor Horsley does wonderful brain surgery and his asepsis is very good. The area of operation is irrigated constantly from the time the operation is begun until it is completed. Very few instruments are used in performing the entire operation. He always makes a very large skin flap, and unless he makes a very large bone flap he does not replace the bone. The opening is made with a large trephine, then with a large bone forcep the desired area of bone is cut away. When it is desired to expose an especially large area a square flap is made with an ordinary saw. In one case of idiopathic epilepsy, a flap of bone six inches square was removed, the dura was excised and the wound was closed without a drain. The hemorrhage from the edge of the bone was controlled by cutting off a small piece of periosteum from the under side of the skin flap and placing it over the bleeding area, making slight pressure for

about five seconds. In this case of epilepsy the overlying bone was thickened and congested. There was some increased intracranial pressure.

In cases of brain tumor he usually performs the operation in two stages. At the first operation he trephines and raises a very large bone flap, controlling all hemorrhage very carefully. The flap is carefully replaced and a dressing applied. One week later the patient is again anesthetized and the tumor is removed. I saw a tumor removed from the left parietal region, the primary operation having been done the Saturday previous. In another case a diagnosis of brain tumor was made. The skull was opened and cortical softening was found. The skull was closed without drainage. A diagnosis of brain tumor was made in another case which had been under observation for one month. On the morning of the day set for the operation, the patient was suddenly taken with severe pain in the back of the head. We saw the patient one hour later, and while the history was being read previous to an examination, the patient died. Mr. Horsley said there was no doubt about the diagnosis of brain tumor, and he felt certain that the cause of sudden death was a hemorrhage into the tumor. He remarked that he had seen several such cases of hemorrhage into the tumor, and in these cases had been able to demonstrate that there had been hemorrhage into the tumor three separate times.

VISIT TO MR. MAYO ROBSON'S CLINIC OF LONDON.

Mr. Robson had one interesting case. The clinical diagnosis was interstitial pancreatitis. The pancreas was found to be markedly enlarged and the gall-bladder was found to be very large and flabby, but not at all distended. No stones were found. The patient had never been jaundiced. An anastomosis was made between the gall-bladder and duodenum with needle and thread. On opening the gall-bladder, while making the anastomosis, some black sandy bile was seen. Mr. Robson drains the gall-bladder into the duodenum in all cases of pancreatitis, believing that better results are obtained by this method than by draining temporarily. In cases of simple gall-stones and cholecystitis external drainage is made. In three cases of pancreatic glycosuria, cholecystenterostomy was performed with excellent results. In each case the sugar disappeared from the urine and the patients are enjoying fairly good general health.

Mr. Robson's technic and asepsis are excellent. At present in gall-bladder work he does not split the rectus muscles. The fascia is cut through over the center of the rectus, the former is carefully separated from the muscle, which is then displaced outward, and the incision is made through the middle of the posterior sheath and peritoneum. Mr. Robson never uses a needle holder.

VISIT TO MR. ROBERT JONES' CLINIC OF LIVERPOOL.

Mr. Jones is certainly master of his work in orthopedics, and he does a tremendous amount of work. He operates at his "Nursing Home" every morning at 8:30 o'clock, then he goes to his office at 11 o'clock and sees from thirty to fifty patients, keeping him busy until about 3 o'clock in the afternoon. Four afternoons a week he operates at some public

hospital. He is surgeon-in-chief at four of these institutions, including a beautiful new hospital eleven miles from Liverpool and situated upon the bank of the Dee river. It is a hospital for children and has 225 beds.

Mr. Jones' office work is very interesting indeed. His offices are located in a large building, and consist of two large waiting rooms, one for the better class of patients and the other for the poorer class. There are ten consulting rooms, one private office, one *x*-ray room, and a small operating room. His *x*-ray photographs are filed away in one room, where over 7,000 radiographs are stored. Near this room is a large splint room. He has also fitted up a regular blacksmith shop, where one man is kept busy making various splints, braces, etc.

He took me with him to see all of his patients. To see him make examinations, advise treatment, etc., was indeed very interesting. His work consists in combining surgical treatment with practical mechanical appliances. The following will give an idea of what he does on a very busy day: Wednesday, when he goes to the Southern Hospital, is usually his busy day, and last week was as follows: He performed four operations at the "Nursing Home;" a loose semilunar cartilage, spastic paraplegia, infantile paralysis of one leg and a bad clubfoot. Then he went to his office where he saw fifty patients. From there he went to the Southern Hospital and performed sixteen operations between the hours of 3 and 7:30 p. m. These cases comprised three cases of loose semilunar cartilages, three cases of infantile paralysis, one osteotomy of femur, one osteomyelitis of tibia, three clubfeet, one torticollis, one case of fracture of tibia and fibula with faulty union, one fracture of elbow and one spastic paraplegia. He does all his surgical operations very well indeed, and the asepsis is excellent.

Every other Sunday Mr. Jones holds a free clinic at his office for the poor, and it is quite a sight. Four or five extra physicians come in on those days to help him. The number of patients varies from 150 to 300.

I think I am safe in saying that I saw 500 orthopedic cases during the week in Liverpool. The details of the various more important operations will be described in the following paragraphs:

In *torticollis* an incision is made directly over the inner third of the clavicle and the tendon of the sternocleido-mastoid muscle is simply divided at its attachment to the sternum and clavicle. He has employed this method for several years, for he found that the results are better than when he lengthened the muscle.

Clubfeet.—In infants in whom the condition is not very bad he corrects the position by manual manipulations, and then applies a tin posterior conclave splint with the foot-piece flexed to a little less than a right angle and everted. The splint is held in position by adhesive strips and a bandage. I saw many of these applied and also many reapplied. They hold the foot in splendid position. In the more pronounced cases he makes a subcutaneous tenotomy of the tendo-Achillis and then applies the splint as above described. In still more pronounced cases he divides the tendo-Achillis and plantar fascia, then applies the same splint as above. In cases of long standing he uses the Thomas wrench for mould-

ing the foot into position. Some of these feet he puts into plaster-of Paris casts, while to some he simply applies the tin splint. In a few of the older cases with marked bony deformity of the foot, he removes a wedge-shaped piece of bone from the outer side of the foot, and also divides the tendo-Achillis and plantar fascia. I saw many of these club-feet in all stages of the treatment, and his results are excellent.

Flatfoot.—In ordinary static flatfoot the sole is built up along the inner side of the shoe and on the inner side of the heel, which is also brought one inch farther forward on its inner side than normal. This makes the patient walk on the outer side of the foot. These patients are also taught to walk pigeon-toed. While under treatment these patients are never allowed to walk without the above-described shoes, not even about the bedroom. Any walking that might become necessary without the shoes must be done on tip toes. In all of these cases an adhesive band is placed about the arch of the foot. Some member of the family is taught how to properly massage the anterior group of muscles over the inner surface of the leg, which is to be carried out daily.

In rigid flatfeet with spasm of the perinei, Mr. Jones excises at least one inch of the perinei tendons. He never just divides them, for by so doing he has found that they grow together again in a short time and cause recurrence. After the excision of the tendons he carries out the same treatment as given above. In some very bad cases he makes forcible overcorrection, then applies a plaster-of-Paris cast for six weeks, after which time he treats them as ordinary cases of flatfoot.

Rheumatoid Arthritis.—Mr. Jones has a great many of these cases, especially of knee and hip. He takes an *x*-ray picture in each case in order to determine the amount of deposit in the joint. In early cases the treatment consists in limiting the motion of the joint to the range, which is painless. This is accomplished by applying a hinged brace in such a manner as to limit flexion and extension to a point a little short of that which is painful. Ordinarily this joint is fixed at about 15 degrees of full extension and allowing about 60 degrees of flexion, thus giving the patient movement of the joint without pain. The results are good, even a practically perfect joint often being obtained in this way. In bad cases ankylosis is regarded as a good result. In case of involvement of the wrist joint immobilization in the extended position is the treatment employed. In any condition of the wrist, such as sepsis, tuberculosis, etc., in which there is danger of ankylosis taking place, it is always dressed in the extended position. The power to grasp objects with the fingers and hand is greatly impaired when the wrist is in the flexed position.

Operation for the production of pseudoarthrosis without disarticulation of the head of the femur. An incision six inches long is made so that the upper border of the great trochanter is at its middle point. Another incision is made across the base of the great trochanter, which is sawed off with the muscles attached. Then the capsule of the joint is opened and the neck of the femur is divided. The free piece of the trochanter with its muscles attached is now fastened to the head of the

femur which remained in the acetabulum. This prevents ankylosis from taking place again. The condition of shock is also avoided, which so often accompanies the removal of the head of the femur from the acetabulum.

Pott's Disease.—Mr. Jones rarely even employs a plaster-of-Paris body cast. Children suffering from this condition are placed on their backs in a position of hyperextension. For this purpose a modified Thomas double hip splint is used. These little patients can be kept clean, can be handled easily and seem to be very comfortable. They do very well indeed. Bad cases are kept in these frames for two years. In others, after a few months, a brace is applied to the back, so arranged that it keeps the back in a hyperextended position and does not interfere in any way with the full expansion of the chest. It is the first apparatus I have ever seen which seems to maintain the correct position just as it should be. This brace is worn night and day and is never removed under any condition except with patient lying flat on a table, the face being downward. The results of this treatment are apparently excellent.

Tuberculosis of the Hip.—In incipient cases a Thomas splint is applied. Advanced cases are placed in bed on a modified Thomas double splint, with the affected hip abducted. In old cases of tuberculosis of the hip with ankylosis and marked shortening, an osteotomy is made at the level of the great trochanter. The leg is placed in a marked degree of abduction until union has taken place. Then when the leg is adducted to a straight position it tilts the pelvis downward on the short side and thus overcomes a great deal of the shortening.

Loose Semilunar Cartilages.—Mr. Jones operates on many of these cases every week. He performs a splendid operation with excellent asepsis. The patient is placed upon a table so that the foot and leg hang over the end, the knee being flexed at a right angle. The incision is made beginning at the level of the lower end of the patella and extending downward and backward. It is therefore lower down than usual. This gives excellent access to the joint, one being able to inspect it and remove the loose cartilage without manipulating the joint at all. There are two decided advantages in this position: first, it gives best access to the joint, and second, no air is pumped in and out of the joint, as is done when the knee is manipulated during the operation. For a period of over ten years the operator has not had the slightest infection or other trouble with any of these cases following the operation. While Mr. Jones is a very careful operator and very thorough as to asepsis, yet he is very rapid.

Fractured Elbows.—These are placed in flexion with no cast or splints. He puts a band around the wrist and another around the neck of the patient. These two bands are then fastened together. The rule as to when the arm has been up long enough is as follows: At the end of the third or fourth week the band about the neck is loosened, letting the arm down to 15 or 20 degrees. If at the end of the second day the patient cannot voluntarily flex the arm to the former position, it is again flexed acutely for another week or two, at the end of which time the same test

is made again. All splints used for putting up fractures are made of concave strips of tin, four or five inches wide. Boiler felting one-half an inch thick is glued into the concavity of each splint.

Extension is applied in all cases of fractures of the femur and leg, also to bow-legs and knock-knees after osteotomy. In these cases a splint is used consisting of two iron rods which meet at one end about six inches below the foot. A leather-covered iron ring is fastened to the upper ends of the rods. The ring surrounds the thigh and fits against the perineum. The splint is applied and extension is made by fastening the straps applied to the leg to the lower cross-bar. The bones are kept in line by the application of tin splints. Patients wearing this apparatus move about and seem to be very comfortable.

Bunions.—The head of the metatarsal is excised. In two cases in which Mayo's operation was performed, a bursa developed when the pad was placed over the ends of the resected bone.

Colles' Fracture.—The fracture is reduced and placed in a position of pronation, with the wrist slightly flexed. It is held in position by two of the tin splints which are twisted so as to fit the degree of pronation. I saw the splints removed from some of these cases and the results were excellent.

Mr. Jones treats a great many cases of spastic paralysis and infantile paralysis. He has now operated on over 300 spastic cases and more than twice that number of simple infantile paralysis. In the spastic cases he expects to enable them to walk with comparatively little difficulty or deformity. They generally walk with the aid of a cane, but some get about unaided. The idiot, the microcephalic and the violent types of diplegic who are subject to fits and who have generally lost control of the sphincters, are not amenable to treatment.

These cases are managed by applying splints, making prolonged fixation of the spastic muscles in a position opposed to their contraction. Where fixation is not sufficient, he does not hesitate to perform tenotomies with excisions of portions of the tendons and tendon transplantation. In these spastic cases a simple division of the tendo-Achillis is never made, for the spastic muscle will cause the tendon to retract high up and cause the patient to walk upon his heel. The tendon is divided and the ends allowed to separate about an inch. The ends are held in this position by strands of a catgut suture, and union takes place rapidly. Mr. Jones never attempts to lengthen the tendon by splitting, sliding along and then suturing. In most of the spastic cases an excision of an inch or more of the tendons of the adductor muscles of the thigh is made. After simple division the muscles reunite without any lengthening, thus giving rise to same troubles again.

The after-treatment is very important. The child must be taught the various movements, and the principles which should govern the exercises are: 1. The movements should be practiced slowly and without excitement. 2. They should be made interesting to the child. 3. Those movements opposed to the direction of the deformity should predomi-

nate. 4. Those presenting the greatest difficulty should be chiefly practiced. 5. They should be taught to walk with the legs abducted.

Infantile Paralysis.—The principle of the treatment here consists in placing the affected muscles in a relaxed condition, and keeping them so absolutely. When a group of muscles is being kept in a relaxed condition, Mr. Jones thinks it is very harmful to let them down even for a few moments at a time. In case of paralysis of the brachialis anticus and biceps, the arm is placed in acute flexion, and in order to keep it so continuously a large diamond-shaped flap of skin is excised from the anterior surface of the arm and forearm with the elbow at its center. The edges are then sutured so as to bring the upper and lower angles together, thus holding the arm in acute flexion.

In case of drop wrist the forearm and hand are put on an anterior splint with the hand portion bent at such an angle as to hold the wrist in marked extension. The test employed to tell whether the drop wrist is amenable to treatment is to ask the patient to try to move the fingers in the direction of extension. If the patient says he cannot, the surgeon takes the wrist and forcibly flexes it still farther. The patient is asked to extend the fingers with the wrist in the new position. If he succeeds ever so little the prognosis is good. Should he fail, treatment will probably be of no avail.

The early treatment of any group of muscles consists in attempting to prevent or correct structural shortening of muscular groups. This usually means hyperextension of the wrist, flexion of the elbow, extension of knee and rectangular fixation of the ankle.

In cases where just certain muscles are positively paralyzed, Mr. Jones frequently grafts a healthy tendon into a paralyzed one or into the periosteum. Cases in which the knee or ankle joints or both are hopeless flail joints, an arthrodesis is performed, transforming the flail-like worthless joint into a fairly useful one. In most of the so-called paralysis of the lower extremity, the psoas and iliacus muscles are usually unaffected. Dependence for walking is placed upon these muscles after the knee and ankle have been ankylosed. The knee joint is ankylosed by removing the cartilages and articular surfaces of the bone. In the case of the ankle joint, the cartilage is removed from the astragaloid surface of the tibia and malleoli. Then a wedge-shaped piece of bone is removed from the astragalus. This wedge is of such size and shape that when the astragalus rests perfectly against the articular surface of the tibia the foot will be at a little less than a right angle. A wedge of bone is also removed from the midtarsal joint. The foot is fixed in the corrected position for several weeks. The wedge is never taken from the tibia, as it might interfere with the tibial epiphysis and the later growth of the shaft. This operation is never performed before the patient is 8 years of age, for before that time one cannot be sure of bony ankylosis. It is also never done until all means of restoring the paralyzed muscle have been tried. Mr. Jones has frequently found that muscles which had been useless for over two years were not hopelessly paralyzed, but were

overstretched muscles, and that by putting them in a state of relaxation they would recover.

In the ankle cases, while waiting to see if the muscles will recover, entire dependence is not placed on the mechanical appliances, for the patients are seen to let the foot drop while changing the brace. The foot is kept flexed by the excision of an oval skin flap from the convex surface of the foot. By suturing the edges, the skin is shortened and put on the stretch, thus holding the foot up. In these cases the tendon of the extensor proprius hallucis is also transplanted into the periosteum of the first metatarsal bone. Mr. Jones has performed the operation of arthrodesis in over 600 cases.

On the whole, I think Mr. Jones' work is quite wonderful. Last week he went to Edinburgh to receive the "Lister Prize" which was awarded him. It is a prize given by the University of Edinburgh to the man who has made the greatest advance in surgery during the past three years.

I was over at Cardiff again for three days after leaving Liverpool. I saw some interesting cases, the principle ones being a goiter, a psoas abscess, a prostatectomy, and a dislocation of the hip joint with fracture of the neck of the femur. In the *goiter case* I was impressed with the small amount of blood lost, also by the extreme care taken to control every particle of hemorrhage after the gland was removed and before closing the wound. This feature of the technic Mr. Thomas learned from Kocher, who lays great stress upon the importance of controlling every bit of hemorrhage at the close of a thyroidectomy in cases of exophthalmic goiter. He says that squeezing the gland has nothing to do with the production of hyperthyroidism, the symptoms of which after operation are due to the absorption of blood from the incomplete control of hemorrhage.

Kocher has carried out many experiments in regard to transplantation of the thyroid, and has found that the only place in which it will remain permanently is in the head of the tibia just below the epiphysis. He has found that placing it in the neck, in the peritoneal cavity, in the muscles, and in various other parts of the body, the transplanted gland disappears in a few months. While in Cardiff I saw another transplantation of thyroid tissue into the tibia of a cretin.

Psoas Abscess.—An incision was made just internal to the anterior superior spine of the ilium and the abscess opened at this point. A pair of long dressing forceps was then inserted, passed downward beneath Poupart's ligament and into thigh to the bottom of the abscess. An incision was then made over the end of the forceps, opening the abscess at its lowest point. Then with pieces of gauze held by strong forceps, the abscess cavity was thoroughly cleaned out. Many large masses of fibrin-like material, together with a great deal of pus, were removed. The entire abscess cavity was packed with gauze, several yards being necessary to fill it completely. Both incisions were then closed. Two days later the upper wound was opened under anesthesia; the gauze was removed and the opening closed again. These wounds heal by primary

intention and there is no further collection of pus. Occasionally in cases in which the pus is thin and watery, the abscess refills and has to be aspirated two or three times. Mr. Thomas says the results are very good, for in twelve years he has had only one case recur. The spine is immobilized after the operation.

Prostatectomy.—Mr. Thomas performs the combined suprapubic and perineal operation. The bladder is opened above and the prostate is lifted from its bed, a pair of long forceps is passed through the bladder, behind the prostate and down against the perineum. An incision is now made over the point of the forceps, and then with one finger through the perineum and one above, the enucleation of the gland is completed. All drainage is established through the lower incision, the upper one being closed completely. The operation is done quickly, the perineal portion not prolonging the procedure more than a minute or two.

VISIT TO MR. MOYNIHAN'S CLINIC IN LEEDS.

Most of the work which I saw at Mr. Moynihan's clinic was abdominal, mostly in the upper abdomen. I saw only two operations outside of the abdomen. One a case of loose semilunar cartilage and the other a goiter.

Loose Semilunar Cartilage.—The patient was placed in the Robert Jones' position, with the foot and leg hanging over the end of the table. The patients are advised to use the knee as soon as possible.

Goiter.—All hemorrhage was controlled very carefully, every bit of oozing being checked at the close of the operation. A glass drainage tube was inserted, but no gauze was used. Having the wound perfectly dry at the close of the operation is regarded as the most important step in preventing hyperthyroidism.

The abdominal operations consisted of the following: *Gall-stones:* I saw several of these cases. Strange to say, nearly every case was complicated and required cholecystectomy. The indications for removing the gall-bladder were when the cystic duct has been injured so that it cannot remain patent; when the gall-bladder walls are so thin that the gall-bladder will not be able to act as a contractile organ.

A point in diagnosis was made, namely, that a patient having frequent attacks of pain, once a week or once in two weeks, accompanied by rigor or temperature of 101, irrespective of jaundice, means a stone in the common duct in 90 per cent. of the cases. These symptoms with jaundice mean a common duct stone every time.

Cholecystectomy.—Two pairs of forceps are applied to the cystic duct at the neck of the gall-bladder and are used as retractors. A cuff of peritoneum is then made on the cystic duct and pushed downward. The duct is now divided and both cut ends are cauterized. The gall-bladder is peeled off from the liver. The proximal ends of the cystic duct and cystic artery are caught separately. Both are ligated, but the ligature on the cystic duct is left long. With a fine catgut stitch the cuff of peritoneum is sutured over the end of the duct. A needle is placed upon the ligature, which was left on the duct, and with it a rubber tube, the

lower end of which is split up one and one-half inches, is fastened around the end of the duct. No other drainage is inserted. Four cases out of five never drain bile. The mortality is less than 1 per cent. By this method Mr. Moynihan claims that no adhesions are formed about the pylorus to give rise to gastric disturbances later.

Duodenal Ulcer.—Mr. Moynihan always feels sure of a diagnosis of duodenal ulcer, but never feels sure of the diagnosis in cases of gastric ulcer. In cases of duodenal ulcer, when the pain always comes late, say four hours after eating, it means that the duodenum is pouched backward toward the kidney and the ulcer is on the posterior surface of this dilated portion. The duodenal ulcer is excised when it can be conveniently done without interfering with the lumen of the duodenum. In other cases a posterior gastroenterostomy with a very short loop is performed. The Connell stitch is never employed, for hemorrhage is said to have resulted from its use.

Gastric Ulcer.—Mr. Moynihan has had several cases of appendicitis in which vomiting of blood occurred. He says that patients who have pain in the epigastrium at irregular intervals, one-half to four hours after eating, also occasional attacks of hematemesis and who have relief from pain after vomiting, are usually suffering from appendicitis and not from gastric ulcer, as is usually diagnosed. The ulcer on the lesser curvature of the stomach is always excised, but the excision is not so wide as was formerly made. A circular incision just at the edge of the ulcer is made. It was observed that perforated gastric ulcers rarely gave rise to trouble after the perforation had been sutured, and from this fact the idea of a small excision of the ulcer arose.

Mr. Moynihan is very particular as to asepsis. He always protects the mouth and always wears gloves. Mr. Freyer is the only surgeon in England whom I have seen who does not protect the mouth and hair and wear gloves. In a series of experiments Mr. Moynihan found that microbes were present in every wound a half an hour after the operation. In every instance the bacteria were the same as those obtained by making cultures from the skin in the operating field. However, in these cases a very small percentage of infections resulted. When the edges of the wound were protected from the surrounding skin, the cultures were found to be sterile. Since protecting the edges of the wound as a routine measure, there has not been the slightest infection in several hundred cases. All English surgeons whom I have seen protect the wound from the surrounding skin as soon as the skin incision is made. They fasten gauze pads to the edges of skin by some special forceps.

COUNTY AND DISTRICT SOCIETIES.

CLAY COUNTY.

The Clay County Medical Society met in regular quarterly session at Flora, in the reception room of the Carnegie Library, at 1:30 p. m., Dec. 14, 1909. The following were present: Drs. B. F. Steely, E. P. Gibson, A. M. Sparling, A. J. Shore, N. W. Bowman, J. M. Boyles, E. C. Park, Jr., J. B. Hazel, Sr., J. B. Haze[1], Jr., J. W. Walton and J. L. Wiggins of East St. Louis. Dr. Wiggins read a paper entitled "The Evolution of Diagnosis in Surgical Cases," which was instructive and highly enjoyed. The paper was discussed at length by those present. A vote of thanks was extended Dr. Wiggins for his valuable paper and a cordial invitation to visit the Clay County Medical Society again. On motion the society adjourned to meet at the next regular time.

J. W. WALTON, M.D., Secretary-Treasurer.

CLINTON COUNTY.

A regular meeting of the Clinton County Medical Society was held in the rooms of the City Hall at Aviston, Nov. 9, 1909, and the following members were present: Drs. Meirink, Vernon, Cotter, Moroney, Drake, Wilcox, Reinhardt, Roane, Alsop, Bechtold, Vogt and Klutho. The secretary read a communication from Frederick R. Green regarding the action of the House of Delegates with respect to open meetings of county, district and other local medical societies, also notice of the resignation of Dr. Charles A. L. Reed as a member of the committee on medical legislation, with his message to the Auxiliary Legislative Committee and through that committee to the medical profession. The message was read before the society. The subject of open meetings was discussed by quite a number of members but no definite plans were arrived at nor any action taken. We all recognize this to be a big and very important subject to the laity as well as to the medical man, but it will take time for its development. The attitude of H. J. C. Beckemeyer, our legislative representative, in voting for the Osteopathic Bill, was denounced by the society, although all possible influence had been brought to bear to have him vote against it. Dr. Alsop made a motion, which was seconded and carried, that H. J. C. Beckemeyer be remembered and that a letter which proves his vote be put on file for future reference. The secretary then read a communication from the state secretary, Dr. E. W. Weis, enclosing a list of lecturers who have consented to read papers and deliver essays to the various local societies in the state. It was agreed to avail ourselves of the opportunity and try to have a lecturer at our May meeting. Dr. Klutho read a paper on "Why I Don't Use Ergot." Owing to lack of time, the discussion was deferred. The question then arose, what should a member of this society do if a mental healer is called in a case he is treating, to, as they call it, help along? Motion by Dr. Moroney, seconded by Dr. Bechtold and carried, that the doctor, if he is aware of the fact, have the patient make a choice between him and the mental healer and discontinue treating such patient or patients at once, if his request is not immediately complied with.

Motion made and seconded that the secretary be instructed to send a copy of the amendments to the Fee Bill, made in a previous meeting, to all the members. Dr. Vernon suggested a vote of thanks to the doctors of Aviston for their splendid entertainment of the society, which was responded to by every member present. It was decided to hold the next meeting, which takes place on the second Tuesday in February, at Breese.

DR. B. J. MEIRINK, President,
DR. JOHN C. KLUTHO, Secretary.

WHY I DON'T USE ERGOT.

JOHN C. KLUTHO, M.D., BREESE, ILL.

During our last meeting a little discussion pertaining to the use and abuse of ergot proved so interesting, and the difference of opinion regarding its virtues were so varied that I have taken the time to look up authorities and also to get some information from some of our good men, and in this paper will endeavor to bring the results before you. As you will all remember, I made a startling statement that I have not used ergot for a good many years, am not using it now, and do not intend to use it hereafter; it was like exploding a bomb in the Russian Duma, everybody wanted to get to me at once. I like an argument and am always willing to meet it with what little stock of knowledge I have in trade. Our medical societies, I believe, are in existence chiefly for the purpose of coming together and exchanging ideas, giving the different methods we employ upon different occasions and telling of our success and failures as pertaining to medical science. It isn't said, then, if one uses a different method or medicine from the others that he thereby assumes superior knowledge over his professional brother; nor does he thereby try to dictate to him in that particular line. He simply states his views and if he has good proof for his assertions he is at least entitled to the privilege of stating them. If, on the other hand, we all held the same opinion in the same cases, did all of our work in the same way; in other words, if medicine was an exact science, our medical meetings would indeed be dull and uninteresting. During our last discussion on this subject I have taken mental notes and in this paper will try to answer you all to the best of my ability. I have written this paper partially for the continuation of the discussion and perhaps a little more so in self-defense.

To begin with, I am going to try to show that ergot as it is used to-day sends more women to an early grave than it saves. Another startling statement, but let us see what we can find. The history of ergot is rather old and remote. According to Playfair it has been known and used by Chinese physicians for many centuries. The earliest known direct allusion to the action of ergot on the uterus was made by Lonicer in 1582, and later on by Camerarius and Desgranges, who record that women in certain parts of Germany were employing spurred grain to accelerate labor. In America it appears somewhat doubtful whether its first introduction was due to Hosack or Herns. At any rate, in 1813 Prescott of Massachusetts published a dissertation on the natural history and medical effects of secale cornutum or ergot. Perhaps only of special interest to the obstetrician is that substance in ergot which is supposed to exert a specific effect upon the uterine muscles, i. e., the ecbolic principle, and in order to ascertain that principle or principles I have diligently scanned the writings and publications of such men as Karer, Bannike, Kobert, Kurdinsky and a number of others. These are all men of the latter day tribe of great chemists and botanists, and their work, if any, must surely carry some weight; and I have found the results of their investigation of ergot even more varied than I had any idea of when I first started this discussion, and if men of known caliber and worth greatly disagree among themselves as to the chemistry and physiologic action of a certain drug, we who must make a living by practicing medicine and who must take the word of such men for granted are certainly groping in the dark when we are indiscriminately using a drug of which we know very little and of which those who ought to know can tell us less.

Banneke in a very exhaustive article attempts to give an exact picture of the present status of our knowledge concerning the chemistry and physiologic action of ergot and its numerous preparations. He divides the various constituents thus far isolated into three groups. To the first group belong the coloring substances—phosphoric acid, fats, cholesterin, lactic acid, mannit, mannon-funyin, etc. They all prove inert. The second group comprises isocholin, ergotic acid, ergotinic, lecalo-amido sulfonic acid, ergotine or ecbolin-ergotenin-picro soclerotin and clavin. These substances exhibit slight physiologic activity. In the third group he places those substances which are supposed to exert a pronounced action and either produce gangrene, convulsions or uterine contractions.

Now, gentlemen, comes a series of confusing and contradictory experiments which should make all ergot users sit up and take notice. Spacelic acid is a strong vasoconstrictor and easily produces gangrene. According to Kobert and Kurdinsky it causes tetanic contractions of the uterus. Spacelotoin prepared by Jackobi as a purer form than spacelic acid shows practically the same physiologic action. It was regarded by him as the ecbolic principle of ergot and in the form of a salt named spasmotin was used by Calm as a drug capable of strengthening regular labor pains; also for the purpose of bringing labor on at will. Later investigations have proved it so unreliable that its manufacturers were obliged to take it off the market. In 1875 Tanret isolated two alkaloids, in his opinion, representing the pure active principle of ergot, a crystalline alkaloid (ergotinin), and an amorphous alkaloid, which he thought to be a physical modification of the crystalline. Independently of Tanret and shortly afterward Kraft also isolated two such alkaloids. He named the amorphous alkaloid hydroergo-tinin. In his experiments both failed to show any specific action on the uterus. Both produced convulsions and both led to gangrene. In other words, these two alkaloids seemed responsible for those undesirable by-effects of ergot when used for therapeutic purposes. The claim of Kobert that his cornutin represents the active constituents of ergot has been positively disproved by Tanret. According to Keller, ergot contains but one base and Kobert's cornutin, Tanret's ergotinin and Draggendorf's picrosclerotin are simply different forms of the same body. Berger, Carr and Dale, according to Bennecke, also isolated that amorphous alkaloid to which they gave the name of ergotoxin. They found it inactive when given by mouth, producing gangrene when actually resorbed. Bannecke further says we have at present no positive knowledge concerning those constituent substances of ergot, which produce convulsions. He sums up the situation by saying that our knowledge concerning the modus operandi of this drug up to this day has remained extremely meager. He further states that at present the ergotinin and the ergotoxin are the only two substances left which are claimed to represent the active principle of ergot. But again, very careful investigation contradicts the justification for such a claim. Kobert, after persistent but unfruitful attempts to obtain this elusive principle, finally compromises by suggesting that possibly the ecbolic principle does not always exist in secale in a preformed state. Kraft, finding himself in the same boat, says it may be formed while the raw plant is subjected to the various chemic influences during the preparation of the tract, etc. But now come the boys, Berger and Dale, and go the others one better. Perhaps they say there is something in the blood which, when it comes in contact with ergot, forms a chemical combination and, presto, we have the ecbolic principle, as it were, produced in the human laboratory. Excellent! Beautiful! Fine! But I fear it is reaching out a little too far. To gain a point, after all of this, Bennecke again and very logically sums up our actual knowledge concerning the chemical constituents and action of the so-called principle of ergot as nil. Ergotoxin is an alkaloid already mentioned in the preceding pages which has been isolated by Berger and Carr in the Wellcome Physiologic Research Laboratory; it is the hydrate of Tanret's crystalline ergotinin, and in all probability the so-called active principles prepared by Kobert and Jackobi owe their activity to the presence in them of ergotoxin. Ergotoxin has been placed on the market by Burrows, Wellcome & Co. under the name of ernutine. They make the following claims for this new preparation: Ernutine in suitable doses produces the effect for which ergot is given. The dose can be regulated with a degree of accuracy which has been impossible in the past, when only extracts and similar preparations of the crude drug were available. Now let us see how far we've gone since 1875. Tanret isolated and introduced this same preparation ernutine under the name of ergotinin; Kraft showed that it was a bad citizen and it fell by the wayside a little later. Berger, Carr and Dale, according to Bennecke, also isolated this amorphous alkaloid and called it ergotoxin. They found it inactive when given by mouth, producing gangrene when actually resorbed. Now, why, under the name of ernutine, it should do all the manufacturers claim for it, when thirty-four years ago its actions were proved to be exactly the opposite, is something I cannot very well

comprehend. Careful clinical tests with ernutine have not yet been reported. Bennecke experimented on animals and obtained results which are somewhat at variance with those of Dale. He suggests that larger doses will have to be given. He does not agree with Dale that ergotoxin represents the only active principle of ergot, because Dale himself states that ergotoxin, even in large doses, if given by mouth, fails to show any effect on the uterus. How large the dose must or should be it seems nobody knows, except perhaps the manufacturer, and where he got that valuable information is a mystery. Now, as we dig down deeper into the mysteries of this, our cherished and beloved drug, we find that there isn't even a known reliable method by which ergot can be standardized. One of the oldest methods is the production of gangrene in a cock's comb, but this tells little more than whether or not a certain specimen is active. The rise of blood pressure following the intravenous injection of a standard dose is also suggested as an indication of activity. Such a method is, however, neither accurate nor complete. Berger and Carr claim that preparations containing ergotoxin can be accurately assayed by physiologic means for their ergotoxic contents. This is rendered possible by observation of the characteristic action of the alkaloid on the terminal motion elements of the sympathetic nervous system. What those characteristic actions are they do not state, and how they would standardize a certain specimen of ergot to any degree of accuracy in that way is beyond my ken. Kurdinoscosky and Kahrer both devised a method by which they expected to standardize ergot. They completely extirpated pregnant and non-pregnant uteri of animals and kept them physiologically alive by sending a constant stream of Renger's fluid through the several blood vessels, and to this fluid they added the different preparations of ergot. Their results have been so different that it is not worth while to consider them. Edmunds and Roth tested eleven specimens of the fluid extract of ergot and found great variation in their physiologic efficiency, some of them being very weak and others positively inactive. Wood and Hofer extensively experimented with fluid extract of ergot obtained from representative manufacturers and from the shelves of reputable druggists. Only two out of eleven samples were found to be active. They further state that not only is the extract of ergot so unreliable, but also very unstable, and if one were lucky enough to procure an active specimen, its deterioration may take place at any time. So much for what our men who ought to know have to say about ergot.

Now for the continuation of the discussion. Dr. Bauer says he uses ergot only in suspected cases of post-partum hemorrhage and retained placenta. Now let us see, our authorities tell us that lowered vitality, broken down constitutions, tedious labors, forceps delivery, etc., predispose to post-partum hemorrhage, but will not any practitioner who has had some experience in this line, tell you that very often it occurs when least expected? Then we know of a degenerative process of the muscle fibers of the uterus, and also of a number of accidental and mechanical causes which may produce post-partum hemorrhage and which cannot possibly be diagnosed or suspected beforehand. If, then, ergot is the thing to prevent post-partum hemorrhage, why not give it as a routine in every case and make sure to prevent that sort of thing. The doctor also tells us that in his twelve years of practice he has had fifteen cases of post-partum hemorrhage, a pretty large number, showing at least that his giving of ergot did not materially cut down the average per cent. He did not mention the outcome of those cases. But I take it for granted that the doctor did not fold his hands and sit quietly at the bedside and wait for the ergot to work out his salvation, but, on the other hand, immediately got busy with a clean rag or a sponge of cotton saturated with vinegar, perchlorid of iron or a peeled lemon grasped in his hand and carry it up into the womb, squeeze out the contents and with the other hand manipulate the body of the uterus from above, and thereby promptly and successfully get exactly what his ergot in the first place failed to do. So what was the use in giving ergot at all? The doctor says it may be easy to procure contractions without ergot while you are present, but what will keep the uterus from dilating after you are gone? But, gentlemen, if the ergot failed to produce the desired contraction and its resulting hemorrhage in the first place, what assurance would you

have that it would do so in the second? If you see to it that your patient is perfectly clean as far as the uterine cavity is concerned and have the desired contraction, just instruct her before you leave to place her hand over the fundus of her womb and when she feels it rising and getting soft, gently manipulate the organ with either one or both hands, and you will find the results will be far more prompt and gratifying than all the ergot in your satchel can produce.

The diagnostic point in cases of retained placenta that is to foretell its occurrence is just as elusive as in post-partum hemorrhage. If, then, in a given case where the placenta fails to be delivered in due time, we say you give a dose of ergot and then wait fifteen or twenty minutes more for its action, which at best occurs only once in six times. Nature has arranged this child-birth business very ingeniously. She starts the contractions on the top, that is, in the fundus, and gradually works down toward the opening, at the same time dilating the os. All those things to facilitate the evacuation of the viscus, when time for such evacuation is ripe. But ergot, should you be fortunate enough to have at hand an active specimen, is also a very unscrupulous and indiscriminating drug. It contracts uterine fibers wherever it chances to find them, and as the os is thicker and contains more fibers than any other part of the uterus, it stands to reason that it will do a little more contracting there than it will in those parts with less fibers. The result is you bottle up your placenta, make matters worse, and 99 times out of 100 you have to go after it with your finger or hand and peel it out after all, so again, what was the use in giving ergot? I told you a little while ago that I have not used ergot for some years, but I did use it during the early part of my practice, and the results I got are perhaps responsible for the prejudice I now hold against it.

The first occasion was in a case of hemorrhage from the lungs. I was called to see the patient some time in the afternoon. As the reputation of ergot for stopping any and all kinds of hemorrhage was pretty well pounded into my cranium during my school-days, I had no doubt as to the outcome. I immediately started giving ergot per os and in a little while switched off to ergotine hypodermically. Well, gentlemen, to make a long story short, I injected enough ergot into that man's system to contract all the garden hose you can find in this town, but the hemorrhage continued with unabated severity. As things kept on getting worse, I finally put on my thinking cap and remembered having seen something about tying bands around proximal ends of arms and legs and packing chest in ice, and after my patient was about depleted and unconscious the hemorrhoge finally stopped.

The next occasion, like the preceding, also occurred in the early part of my practice, only it is more of a test because it happened in a real case of labor. I delivered the woman, or rather she delivered herself, without much trouble, and I did the cord-tying stunt and went home. The woman had a slight continual hemorrhage, which, after about six hours, became rather profuse, and I was called to see what I could do for it. Of course, I knew ergot to be good for hemorrhage and I immediately proceeded to administer it. It was one active out of the eleven I was telling you about and it worked like a charm; bleeding all stopped and everybody was happy. What did I care for a little thing like a uterine hemorrhage as long as the rye got smutty and our manufacturers knew how to make it into a decoction? I saw the woman every day. The womb reached up to the umbilicus and it was a great deal larger than I thought it really should be, but she was feeling well, had no hemorrhage, so what was the use to worry? About four or five days thereafter, at 8 p. m. (I'll never forget the time, it was about the middle of August and about as hot as it ever gets in this clime), when I got to the bedside I was sweating like a trooper and the woman was having a genuine septic chill. I did then what I should have done before I gave the ergot, namely, put my finger up there and found the womb greatly enlarged. I dilated the os without much difficulty until I could introduce three fingers, and after scraping out all I could with them I finally forced in my hand and got out five or six handfuls of clotted blood that looked like liver. This procedure brought on a great deal of fresh hemorrhage and that, together with the screaming and squirming woman, the extreme hot weather, the fainting of the husband who was holding the

lamp, mark this episode as not only one of the most exciting but also one of the bloodiest propositions I have ever been called on to take care of, and just think of it, all for a dose of ergot. I finally got her cleaned out, packed about five yards of gauze in the open uterus, and after a six weeks' siege in bed the women finally recovered. Perhaps a piece of membrane or placenta had remained in the womb and had been the cause of the hemorrhage. The ergot I gave was unfortunately active, tightly contracted the mouth of the uterus, and as the blood slowly kept on oozing out it went in the direction of least resistance, namely, toward the fundus, filled up the cavity until by its own pressure it caused the hemorrhage to stop. The clotted blood finally became infected and hence all the trouble.

Now I know you will all admit or rather agree with me that I made a serious mistake in giving that ergot for that hemorrhage. Would it not have been better if I had looked for the cause, removed it in the first place, and if then it had been absolutely necessary for any one to take ergot to have drank it myself?

Dr. Carter tells us he used ergot all along until one day in St. Louis he heard some one read a paper which was derogatory to ergot. That same evening he had a labor case, omitted the ergot and was promptly called out during the following night for a hemorrhage. He went immediately to the bedside, administered the latent dose, went back home to bed and spent the rest of the night in peaceful and undisturbed slumber. The question in that case arises, was the omission of ergot the cause of rousing our dear doctor out of bed at midnight to attend said hemorrhage? I think not, taking into consideration that two bottles out of eleven are active, besides the probability of deterioration of those two bottles. The doctor must have been or rather is extremely fortunate in always getting the active product, or else, under the general run, only one woman out of his six would get the benefit of actual uterine contractions and the other five would have to be contented with a had taste in the mouth and a sick stomach. If that particular case the doctor was telling us about was suffering from a simple hemorrhage, due perhaps to a slightly relaxed uterus, a little manipulation of the fundus performed by the woman or a cold pack would have stopped that hemorrhage just as efficiently and, I dare say, in less time than ergot. If, on the other hand, the hemorrhage was due to retained membranes of placental tissue, ergot, of all drugs, was absolutely contraindicated. Dr. Bauer says that when he first came to Germantown he did not use ergot for about one year, then one day he was discovered. A midwife came to his office and said, "Doctor, I would like to get some ergot." After he told her that he did not have a drop of ergot in the shop, the woman threw up her hands in astonishment and said, "What, doctor! You practicing medicine without ergot!" Since then the doctor has been using ergot.

A short time ago a woman came to my office and said, "Doctor, that medicine you gave me last time I was here is bad stuff to take." "Well," I said, "madam, it may not be sugar-water, but it isn't the worst tasting medicine by any means." "Oh, no," she said, "I've taken worse; that black stuff they give you after childbirth is the worst medicine I ever took. My last babe was born twenty years ago, but I'll never forget that taste, not if I get to be a hundred years old."

Drs. Gordon, Gissy and Meirirk say that they use ergot indiscriminately just as regular as tying the cord. Well, their women will remember them a long time for it, for if that vile and nauseating taste still lingers after a lapse of twenty years, the surroundings closely connected with the occasion are certainly not so very soon forgotten. Dr. Bauer again tells us that every time he omits the ergot after child-birth, say ten or fifteen minutes after everything is over, the woman says, "Oh, doctor, I feel so bad." The ordeal through which a woman passes when she gives birth to a child is certainly a great one. We have a solution of the continuity of a gradually complete, if only a temporarily established circulation, a loss of about 8 or 10 pounds of bulk, a general shifting of the organs of the abdomen and, I might add, of the thoracic cavity, just such a condition that would bring on a certain amount of shock, a dizzy and faint feeling, etc., and especially so where the woman is a little below par. Drs. Gissy and Gordon immediately nodded their heads in assent with Dr. Bauer's assertion. Their women also say, "Oh, doctor, I feel so bad, if the ergot is omitted." Now, gentle-

men, there are two things I'll concede to ergot. One is, it sometimes contracts the womb, and the other is, it always makes the woman sick as the devil. Ergot has never been accused of being a stimulant nor a sedative and couldn't possibly have any influence on this bad feeling the doctors were telling us about, except perhaps to augment it. As they are in the habit of giving it, their vivid memory regarding said condition would rather indicate that it is brought about more in spite of ergot than for the lack of it. I would like to say a great deal more on this subject but this paper is already longer than I had at first intended.

In conclusion, however, I want to go on record, and with me are not only hundreds but thousands of other physicians, that ergot is one of our most unreliable, most mysterious, most vile and, last but not least, most dangerous drugs that is to-day recorded in our pharmacopeia. I say most unreliable because, according to pretty good authority, only one-sixth of the entire output is active, besides its being very unstable. I say most mysterious because nobody seems to know much about it; most vile because its nauseating taste and actions linger for twenty long years in the system and memory of those who have taken it; most dangerous because it has indirectly sent many a woman to an early grave. Why this drug should have cloven so tenaciously to the hearts of the practitioners all these long and many years without being discovered and placed in its true light, only adds to its mysteriousness. It somewhat reminds me of the old and decrepit family dog. While he was young he never did amount to much but was kept because every well regulated family had a dog, and when he got old and of no use at all, nobody wanted to nor had the heart to kill him because he had been with the family so long, and he is left to die a natural death. And so it is with ergot; nobody wants to kill it, it has been with us so long; but, like the dog, it is going to die a natural death, for there are thousands of physicians to-day who are not using it at all, and the number of adherents who are burning incense at its shrine are decreasing in number every day, and I venture to say that it won't be many years before it will be relegated to the class of has-beens, not only for the benefit of the physician but also as a great blessing to womankind.

COOK COUNTY.

CHICAGO MEDICAL SOCIETY.

Regular Meeting, Oct. 20, 1909.

The society convened at 8:30 p. m. in the Northwestern University Building, with John A. Robison, president, in the chair. This was a clinical meeting, and Dr. Arthur Dean Bevan presented a case of sacrococcygeal tumor, appearing in a child at birth and operated on when two weeks old. Dr. Davis read the history of the case and described the microscopic findings, and also showed the gross specimen which presented four small cysts. A study of the tumor presented three points of interest: 1. Two nodules about the size of split peas. 2. Three areas that looked a good deal like healed ulcer of the stomach. 3. A white line that was discovered in the physical examination. The gross findings of this cyst correspond closely with tumors that have been called hygromas in 1843 by Wernher occurring anterior to the sacrum and which, according to him, are similar to those in the neck called cystic lymphangioma. In 1858 Lotzbeck showed six more cases. He had, in all, fourteen cases. Since then some more have been reported. Pathologists have described these as of purely endothelial origin and this was quite in accordance with the section here until we found a rest of epithelial tissue. This would throw out lymphangioma. The epithelial rest would speak more for its origin from the neural canal. A conclusion cannot be arrived at until the tissue has been stained for glia and ependyma cells. The case will be more thoroughly examined and reported later.

Dr. A. D. Bevan:—The section which Dr. Davis refers to is a cross-section of an irregularly epithelial lined tract or canal, and it is quite in keeping, as he suggests, with the development of this from the neural canal. Anyone going over the literature must be impressed with the enormous divergence of opinion as to

the origin of these tumors. I think, however, one can be perfectly safe in this general statement that sacrococcygeal tumors of this type bear out very well Cohnheim's theory and are due to the development of embryonal rests at the caudal end. Of course, this is not a very clear statement, but one that, I think, covers the ground pretty well.

My second case which I desire to report to-night is a case of carcinoma of the larynx operated on six years ago without any recurrence. The man speaks remarkably well and can be heard in any ordinary room, and he does this without any larynx and without any communication between the mouth cavity and the respiratory tract. I regret that he could not be here to-night. He talks by drawing in an enormous amount of air into the pharynx and into the cheek cavity. When he talks you will see the side of his neck and his cheeks swell out, and that is from the air he uses in speaking.

I shall present as my second case of the evening a very interesting case which is the second one we have had in our service within the last year, and I am inclined to believe it presents a new phase of ulcer of the stomach. About a year ago we had the first case of this type. It was a woman who gave a very clear history of previous stomach ulcer. When brought into the hospital she weighed about 80 pounds. Her normal weight had been about 125. She could swallow water and it would pass through the esophagus and through the stomach if not too large an amount was taken at once. She could swallow small quantities of milk, about an ounce, at a time. She could not swallow three ounces of milk and take a cracker. If she did there was shortly a regurgitation of apparently almost all the milk and the cracker. She was losing weight rapidly, and after going over the case carefully I came to the conclusion there might be a possibility of obstruction in the way of an hour-glass stomach. An *x*-ray picture taken immediately after the patient had swallowed a glass of water containing three ounces of bismuth showed the bismuth in the lower end of the esophagus and in a small pouch of the stomach. Another picture taken twenty minutes later showed the stomach divided into two pouches, the larger at the esophageal end. This very definite demonstration was confirmed three different times and we had no doubt we had an hour-glass stomach to deal with. Imagine my surprise at the operation to find there was no hour-glass stomach. There was a stomach sausage-shaped, rather narrow, rather contracted, but there was no evidence of constriction in that stomach at all. With the definite information we had from the *x*-ray, however, I had no hesitation in cutting into the larger pouch, when I found a constriction that would simply admit a small metal probe leading into the second pouch. The constriction had not extended to the peritoneum or the muscularis but was confined entirely to the mucous membrane and submucosa. In ordinary cases of hour-glass stomach and ulcer of the stomach generally the scar tissue extends into the musculature and through the peritoneal coat and is visible from the outside. The operation was practically that of a Heinecke-Miculicz pyloroplasty. The patient made a good recovery.

The second case was a young man brought to my attention by Dr. Sippy, whom we all know is very much interested in stomach work and does very admirable diagnostic work in this line. He found that this young man a year and a half before had an acute stomach ulcer, and he concluded he had pyloric obstruction from scar tissue. The man is well and under 30, and although there was little or no free hydrochloric acid in the stomach, the evidence was rather against carcinoma, and still the possibility had to be considered. Two weeks ago yesterday we operated on the case. We found a normal looking stomach; it was rather thick, it was contracted, there was no dilatation, the pylorus was perfectly normal, there was no evidence of scar tissue extending through the muscularis or peritoneum. However, with our previous experience in mind, and making an effort to invaginate the stomach into the pylorus with my finger, which is something I often attempt to do in these cases, very close to the duodenum I came across a band which prevented this procedure. We had very much the same condition to deal with as in the other case. We made an incision into the large pouch and found a constriction about an inch and a half from the pylorus which

would not admit the end of the little finger. It amounted essentially, as Dr. Sippy had found clinically, to a pyloric obstruction. We made here the same operative procedure as in the other case. Of course, it is very early after the operation, but the result is very satisfactory so far and the patient can take milk, cream, eggs, milk toast and semi-solid food without any evidence whatever of obstruction, so that we are very hopeful the patient will go on to a complete recovery. There is just one other item of clinical importance that I desire to call attention to. I have here an *x*-ray picture that shows a definite shadow at the point indicated. This was confirmed in three different pictures, showing the same shadow in the same position, the ordinary position of stone in the kidney. That shadow is the very unusual finding of a gall-stone in the common duct. This is only the fifth case out of more than a hundred in which a gall-stone has cast a definite shadow. I have here the stone which we removed this morning through the transduodenal route from the ampulla of Vater, and confirming definitely the *x*-ray picture. I should like very much if the surgeon would examine this. Findings of this kind are so rare that the value of *x*-ray in gall-stone surgery is very limited, but in this particular case the findings were of enormous value, because the man had a history of passing a gall-stone the size of a hen's egg from the rectum. Following that he had an abscess in the region of the gall-bladder which was drained. Following that dense adhesions formed about the pylorus, and following that the typical ball-valve picture of stone in the common duct described by Fenger. Yet it was a case in which the surgeon would hesitate to do a radical operation unless as found in this case we have definite evidence of the existence of stone. Ordinary cholesterin stones show no more shadow than normal salt solution or a piece of liver. These stones, however, that show are usually stones that contain a considerable amount of bilirubin calcium or calcium carbonate.

DISCUSSION OF DR. BEVAN'S CASES.

Dr. William Fuller:—I would like to ask Dr. Bevan why he removed the stone through the transduodenal route. I would also like to add that the oxid of zinc paste that he used in the case of a baby is a very excellent thing to use in making an artificial anus or in preventing excoriation of the body from discharges or secretions of any kind at any place.

Dr. Daniel N. Eisendrath:—Dr. Bevan's case of hour-glass stomach will certainly open the eyes of the surgeon to a new departure in gastric pathology. We are usually accustomed to see hour-glass stomach with the typical constriction with which we are familiar, being usually more marked at the greater than on the lesser curvature, and I am sure a considerable number of cases have been overlooked in which the external signs on the serosa were not in evidence. I am sure this case is of importance because of the absence of these external signs. The only question I would like to ask is whether the pyloroplasty as performed by him, *i. e.*, the Heinecke-Miculicz operation, is preferable to a gastroenterostomy with the proximal pouch. I should fear there might be secondarily cicatricial contraction if the same process was kept up which had originally given rise to the hour-glass stomach and a recurrence might ultimately result.

Dr. Otto Holinger:—I am sorry I could not see the case of Dr. Bevan, but the fact that a patient without a larynx can talk quite audibly is nothing so very remarkable, and I can remember at least two cases where, after complete removal of the larynx the patient could speak quite audibly to an audience of almost any number. A peculiarity of one case was that two folds of mucous membrane formed a transverse glottis so that the side muscles of the neck were able to stretch and relax it. In regard to the hour-glass stomach, if I remember right, Dr. Bevan said the bismuth remained for twenty minutes above the stomach.

Dr. Bevan:—The first picture was taken immediately, within a few seconds. Within twenty minutes it was in the stomach.

Dr. Holinger:—This seems to me of importance as to the etiology of such a condition. We have lately begun to get entirely different views as to diverticula of the esophagus, and it has been found that it is not such an extremely rare condition as it has been described. I saw an operation only two months ago for diverticulum, and in the same clinic, which has not a very large amount of

material, only four months before another case was operated on. Now, should it prove true that these bands of mucous membrane in the esophagus occur more or less frequently, then we would have in these bands in the stomach but a parallel to the bands in the esophagus.

Dr. Bevan:—This was the picture immediately, within half a minute; it was within the lower end of the esophagus that first presented. Within twenty minutes there was only a small amount in the lower end of the esophagus, and it was found in the two pouches of the stomach.

Dr. Holinger:—Of course, that would not be a diverticulum of the esophagus, but at least is another parallel to a stricture of this kind. So, if I may suggest as to the probability of the final outcome of the operation, I do not know whether I would not have looked for this stricture in this esophagus also.

Dr. Bevan:—That was carefully looked for. We thought at first it was a diverticulum of the esophagus.

Dr. Holinger:—The symptom of food lodging above the stomach is quite characteristic of diverticulum of the esophagus, and if we can look for parallels in this direction I think it would open up a possibility for an explanation of that whole condition.

Dr. Bevan (closing the discussion):—In reply to Dr. Fuller as to why the transduodenal route was selected, it was because no other route was possible. The stone was in the ampulla of Vater, which is within practically the intestinal canal itself, and the whole mass was so surrounded by adhesions that there was nothing else to do except to remove it by the transduodenal route. I think it would have been impossible to remove it except by cutting into the pancreas.

In regard to the question of Dr. Eisendrath as to making a gastroenterostomy, that was considered, but the stomach was so small that it was thought preferable to do the extensive division. I am quite satisfied if the conditions warranted that the proper method of handling these hour-glass stomachs is to cut out the constricted portion and make an end-to-end anastomosis because we have had recurrences by other methods. But many of these patients are mere remnants of humanity, so low in vitality that a very extensive operation is not really warranted.

DISCUSSION OF DR. FISCHKIN'S CASES OF XANTHELASMOIDEA AND LUPUS ERYTHEMATOSUS.

Dr. L. C. Pardee:—I wish to emphasize the extreme rarity of these cases of urticaria pigmentosa. We have had, I think, in the last ten years before the Dermatological Society two cases, and this is the first case I have personally seen of the yellow type. More frequently the cases are more pigmented. There is distinctly more of the urticaria in this case, but they are so extremely rare and we know so little about them that I am very grateful for the presentation.

The results in the treatment of lupus erythematosus have been excellent. I think the carbon dioxid snow will prove to be the best method. I have worked out two or three theories of treatment of my own, but they have not been successful. I have been successful in the acute discoid cases where there has been but one lesion in removing it with the *x*-ray, a mild treatment not going so far as to produce any reaction, but I agree with Dr. Fischkin that it must be used with great caution, and it frequently causes an aggravation of the trouble. With the snow I have had most excellent results and the lesions heal without scar at all.

Dr. Max Reichmann:—I had occasion the last few weeks to observe a case of lupus erythematosus with Dr. Schiller. The patient was referred to me for Roentgen ray treatment. The first time I gave him a very mild dose, one-half milliampere running through the tube for ten minutes, and, to my astonishment, three days afterward I found a very considerable exacerbation of the affection. I waited a week or so and gave him another treatment, with the same result. Finally I sent him back to Dr. Schiller for a different treatment. All authorities agree that this affection of the skin is not a good one for treatment by the Roentgen ray.

Dr. E. A. Fischkin (closing):—In answer to Dr. Pardee and the other gentlemen who have been so kind as to discuss the case, I would say that I have not employed tuberculin in this trouble, for the reason that the connection between lupus erythematosus and tuberculosis is very vague.

The best article on the subject is that of Jadassohn, in "Mracek's Handbuch der Hautkrankheiten," and from that you will see how discouraging the knowledge of lupus erythematosus is. Hundreds of observers have come to different conclusions, and even those who see a connection between lupus erythematosus and tuberculosis do not agree upon the nature of this connection. It is microscopically different from tuberculosis; we find no tubercles and tubercle bacilli, and clinically the connection of the two diseases has as yet not been proven. The histories of tuberculosis or of suspicion of tuberculosis in a large number of patients or their families offer but little conclusive evidence, when we remember that one-seventh of all persons have tuberculosis. In autopsies held in Vienna clinic on patients who had lupus erythematosus, tuberculosis was detected in no larger proportion than in patients who have died from other diseases. The injection of tuberculin in patients with lupus erythematosus has shown a general reaction only in those who were tubercular, the local reaction was more or less doubtful, and a real cure from tuberculin injection was seldom observed.

One experience is emphasized by most writers, and we saw it corroborated this evening, and that is, that the more recent the case the better will be the result of treatment, no matter what kind of treatment you employ, and that in old chronic cases you will have disappointments, no matter what treatment you use.

CASE OF TUMOR IN THE REGION OF THE HYPOPHYSIS.

Dr. Julius Grinker:—In view of the meeting which will be held next week on the subject of brain tumors I think it timely to demonstrate at least one case of brain tumor, which has only very recently become accessible to surgical interference.

The patient is a carpenter, aged 43 years, the father of two healthy children, of whom one died in infancy. He has no history of venereal disease; is a moderate drinker and smoker, never excessive in anything. He had not exposed himself to any kind of trauma. His family history is good, his father dying at 73 and his mother at 75. There is no similar case in the family. Thirteen years ago he had an attack of inflammation of the bowels; about eight years ago he had inflammatory rheumatism; last May he had tonsillitis and rheumatism and one tonsil was removed.

His present trouble dates back about one year. At that time he had dull headaches and dizziness. At about the same time he could not see well, there were mists and clouds in front of his eyes which prevented him from distinguishing persons. Improvement occurred rapidly, but later he became apathetic, generally indifferent to his former interests, and slept very much. He had headaches which were at times very severe but of short duration. At other times they were dull, more like neurasthenic headaches. Last April he again noticed that he could not see well, things were indistinct, and particularly did he notice that he could not see anything to the outside of either eye. He attended the eye clinics without receiving any benefit and finally became a patient of Dr. R. S. Pattillo of the Post-Graduate Medical School, who took ophthalmometric measurements and fundus findings and then referred him for further examination to Dr. A. A. Goldsmith, who also recognized the case as one of probable tumor of the hypophysis. Both of the gentlemen kindly referred the case to my department, for which I herewith express thanks.

I examined the patient June 4, 1909, and found normal viscera and reflexes, no evidence of enlargement of the hands, fingers, feet or toes, no enlargement of any of the bones, sternum, clavicles or vertebræ. It appeared to me, however, that the face seemed slightly enlarged, particularly at the cephalic pole. The inferior maxilla appeared somewhat enlarged, and the ears and nose were somewhat more voluminous than in the normal. Eyebrows were coarse and the region of the supraorbital arches were somewhat enlarged. The tongue did not show any

enlargement, the larynx was of normal size, the pulse was and still is rather slow (50-55). He came complaining of a dull headache and a tired feeling at times. He never had nausea nor vomiting and did not feel dizzy. On examining his eyes, however, I discovered a typical bitemporal hemiopia, as will readily be seen by the usual tests, which I am now demonstrating. I notice that the right eye has become much worse since I last examined him, a few weeks ago. He then showed a typical bitemporal hemianopsia. The blindness in the outer field of vision of each eye was unmistakable. The diagnosis was pressure on the optic chiasm, particularly of the central portion of it, cutting off the nasal temporal field of vision. In other words, tumor of the hypophysis region.

To make the diagnosis more certain, I referred the patient to Dr. Max Reichmann's laboratory, to have an *x*-ray photograph taken. Two pictures were made that show most beautifully the enlargement of the region of the sella turcica. I have marked them with a little black star, and Dr. Reichmann has kindly consented to show the negatives.

Dr. Reichmann demonstrated to the members the *x*-ray plates, which showed decided enlargement of the sella turcica.

A CASE OF PROGRESSIVE MUSCULAR DYSTROPHY OF THE PSEUDOHYPERTROPHIC MUSCULAR ATROPHY TYPE.

The case I am presenting is not very uncommon, but rarely is a case shown thus early, and therefore I believe it of interest. He is 5 years old and was born in normal labor, preceded by a miscarriage and also followed by one. A sister, younger than himself, showed nothing abnormal. The boy began to walk when one year old. The mother noticed, however, that he was more clumsy than the other children; and a little later she noticed a weakness of his legs which has grown worse, so that at this time, while he can still walk fairly well, his gait is not quite normal, as can be seen by those who sit near. This boy does not have much muscle, but enough to get along with, and in examining him you will find the muscles of his scapulæ are rather flabby and so are the muscles on the hip. While he is still able to walk on a level surface, he cannot walk up a flight of stairs. As soon as the glutei and the back muscles are called into action he fails completely. You will notice that when on the floor, full length, he gets up in a way typical of patients afflicted with progressive muscular atrophy; in other words, he "crawls" up on his thighs. You will also notice that the calf muscles are very much hypertrophied. In my opinion, this is a case of the pseudohypertrophic type of muscular dystrophy. With my fingers hooked into the axillary spaces and attempting to raise him you will notice the looseness of the shoulder muscles, permitting the shoulders to rise much higher than normally. Sometimes they come up to the ears, showing the atrophy of this entire group of shoulder muscles. This is the only case in the family. As the mother is quite young there may be others. This disease belongs to the hereditary and family types of progressive muscular wasting. The pathology is to be found in the muscle cells and not, as in the spinal atrophies, in the cord structures. Such patients may live a long time, but any intercurrent affection carries them off easily. We have at the present time in the Cook County Hospital a patient of this type who is about 30 years old and a brother of his, 48, who has the same disease. There is no telling how old they may become yet. It is not a fatal disease, as is the spinal cord variety. The disease is usually not recognized at this stage because of the very slight weakness present. Later everybody can diagnose it.

The treatment is unsatisfactory. In the early stages we endeavor to strengthen the muscles by electrical stimulation and the administration of gradually increasing doses of strychnia, administered by mouth or hypodermically. It is just in such cases where the dose of strychnia is made as high as the patient can tolerate without producing strychnin poisoning. Hygienic measures are not to be disregarded.

DISCUSSION OF DR. GRINKER'S CASES

Dr. Max Reichmann:—I have been fortunate enough in the last three years to have four patients referred to me with this disease. Dr. Church published these cases in *The Journal of The American Medical Association* last July. In

all the cases Roentgen diagnosis was made without knowledge of any of the symptoms or any history. The first case was one which Dr. Church saw with Dr. Wood, and I pointed out this enlargement of the sella turcica and suggested there might be a tumor. The second case was a young women with a pronounced tumor of the sella turcica. She was operated on here and died. The third case was a man with a pronounced excavation of the sella turcica. He was operated on in Vienna, and is healthy to-day. Dr. Grinker's case is the fifth. Dr. Steindler took this plate; and it shows very beautifully the outline of the tumor in the sella turcica. The diagnosis by Roentgenograms of tumor of the hypophysis is quite a different matter, and in looking up the literature I find there are only three cases reported in the journals outside of these cases which Dr. Church reported.

Dr. L. Harrison Mettler:—These patients are especially interesting to neurologists and biologists because of certain physiologic and histologic obse vations made in cases of this class.

The first case, as Dr. Grinker says, belongs to a class that is not difficult of diagnosis. In fact, the signs of pituitary tumor are among the most definite localization signs of any that we possess in connection with any form of intracranial neoplasm. The sleepiness, the trophoneurotic changes of acromegalic type, and especially the eye findings, notably the bitemporal hemianopsia, are all but pathognomonic. I reported before this society not so very long ago a typical case.

The particularly interesting feature to me in this class of cases is the suggestion made by Gaskell that the reason why disease of the pituitary gland (especially the anterior part of it), though situated so deeply at the base of the brain, gives rise to trophoneurotic symptoms, resembling broadly the symptoms observed in disease of the thyroid and related glands, is that there is a separation of the anterior part of the hypophysis from the related thyroid group of glands during the embryologic closing of the archenteron at the back of the buccal cavity. The infundibulum, carrying the hypophysis at one end and opening into the central canal of the cerebrospinal axis at the other, represents a part of the primitive alimentary canal. When the present alimentary canal was evolved the associated glandular structures got separated, part remaining with the thyroid in the throat and part being enclosed in the cranial cavity. The trophic resemblances between acromegaly, cretinism, exophthalmic goiter and similar affections are easy of explanation if Gaskell's hypothesis is correct. This biologic suggestion seems to me to open up a far more interesting question than the mere clinical manifestations of these more or less related diseases—clinical manifestations which usually are so simple, definite and easily observed!

In connection with Dr. Grinker's second case, I would like, if time permitted, to refer to a number of things in regard to the dystrophies that are of unusual interest to the neurologists. Dr. Grinker referred to the fact that the dystrophies, of which his case is an example, are primarily muscular, and not nervous, troubles. Strictly speaking, that is true. The life-period of the muscular elements is diminished as compared with the life-period of the other tissues of the body. There is nothing extraordinary about this, however, for it is a common observation that other tissues, the teeth and hair, for instance, atrophy and die in some families before the other tissues of the individual break down. Through some hereditary influence there is a differentiation of the normal period of existence between the different tissues of the entire organism. In the case before us the muscles indicate the family weakness, instead of the hair and teeth as in other families.

Another point which I wish to bring out in connection with this case is that while the dystrophies are accepted as primarily familial muscular inadequacies, there is believed by many to be a closer connection between them and the ordinary spinal progressive atrophies than is usually supposed. Some biologists take the broad view that the lower motor neurons and the related muscles constitute, as it were, one organ. Certainly this is true physiologically. Therefore, whether we say the disease is primarily in the muscles, or primarily in the nervous elements, is a matter of little moment. It is in the neuromuscular organ and the

localization of the lesion is more interesting than essential. Indeed, the suggestion has been made that even these muscular dystrophies owe their trouble primarily to some biologic defect, as yet unknown, in the trophic functions of the related neural elements. If that is so, the spinal atrophies and the muscular dystrophies are not so sharply separated as we are inclined clinically to regard them. I deem this an extremely interesting question; and if, perchance, it is ultimately answered in this way, the answer will go far toward clearing up many of the confusing similarities between the dystrophies and the progressive atrophies of spinal origin.

CASES OF TORTICOLLIS.

Dr. Chas. M. Jacobs:—I have here for presentation a number of cases of congenital torticollis or wryneck. As the name implies, it is a twisted neck and, therefore, a deformity and not a disease. The congenital form is of intrauterine origin, and is a painless shortening of the muscles of one side of the neck, particularly the sterno-cleido-mastoid and less often the trapezius. Stromeyer first advanced the theory, which was generally accepted, that congenital torticollis was due to rupture of the muscles at birth with an accompanying hematoma and myositis, which ultimately destroyed the substance of the muscle, causing contraction and deformity. Whitman has tried to disprove this and has advanced many reasons, the most important of which, stated briefly, are: 1. That the rupture of a muscle in any other part of the body does not produce a myositis and contraction. 2. That it is impossible to cause myositis and contraction by any form of injury to the muscles of animals unless it be combined with actual infection with pyogenic germs. 3. Most of the cases of congenital torticollis, seen soon after birth, present no evidence of hematoma. 4. Seven consecutive cases of hematomas examined proved that not one of them was followed by torticollis.

The deformity is generally considered more common among females, and the left side more often affected than the right. My own experience has proven the contrary. At the time of birth the deformity may be so slight as not to attract attention, later the head is drawn to the side of the contracted sterno-cleido-mastoid muscle, which stands out as a tense band, and the chin is slightly elevated and points in the opposite direction. The sternal end of the sterno-cleido-mastoid muscle is more often contracted than the clavicular.

Congenital torticollis is simulated by cervical Pott's disease. In the latter there is restricted motion of the head in *all* directions and the head and chin are drawn to the *same* side. Tension on the muscle is painful. In the former, motion of the head is restricted in one direction only, *i. e.*, away from the contracted muscle. The head is drawn to the side of the contracted sterno-cleido-mastoid muscle while the chin points in the opposite direction.

In this young man you will notice the head is turned to the right, the chin points in the opposite direction and there stands out the sterno-cleido-mastoid muscle especially at its sternal and clavicular ends. You will notice the secondary distortion of his face. It may be of interest to know that this young man is one of twelve children and he has had a brother and sister operated on by me for torticollis.

In the second case, a young girl, you will notice this secondary distortion of the face, which is more marked, as shown in the picture taken before operation.

The third case is that of a woman, aged 30 years. She was operated on when 13 years old, but was not put in a plaster cast following the operation but wore a brace for six weeks with no improvement of her condition. She has a nephew afflicted in this way. She was operated on by me just one week ago, and you will notice that she is in a plaster cast with the head in an over corrected position, *i. e.*, the head is in the opposite position from what it was before operation.

Here is a case operated on one year ago, with no return of the deformity.

Dr. Daniel N. Eisendrath:—What method of operation do you use in these cases?

Dr. Jacobs:—I prefer the open operation, as there is less danger of cutting an important blood vessel. The open operation consists of making a longitudinal incision one-half inch above the clavicle, over one of the contracted ends of the sterno-cleido-mastoid muscle, beneath which a groove director is passed and on which the tendon is divided. If necessary the other tendon is cut in like manner through the same incision. The divided ends are left alone, as they will unite in four to six weeks by the formation of a new tendon. The skin incision is closed with interrupted stitches of fine cat-gut. A plaster cast is then applied from the head to waist, with head and chin in the over corrected position.

So far as the other methods of operating are concerned, with the exception of subcutaneous tenotomy, I have had no experience.

Regular Meeting, Oct. 27, 1909.

DISCUSSION ON THE PAPERS OF DRS. SPILLER AND CUSHING.

Dr. D'Orsay Hecht: I think there can be no dissenting opinion as to the character of this meeting. The remarks of Dr. Marvel, of Dr. Reichmann and our distinguished guests, Drs. Spiller and Cushing, have certainly been instructive, and I think each and every one of us feels under great obligation to these gentlemen for the admirable presentation of their respective topics.

Those of us who follow the trend of neurologic thought, either purely neurologic or neuro-surgical, as set down in the literature by the master minds, see, I think, reflected in the addresses of this evening work of very much the same high standard of excellence. Surely there are none better qualified in this country to speak authoritatively on the neurologic and neuro-surgical aspects of brain tumor than Drs. Spiller and Cushing. These gentlemen have brought to their task the very best preparation, the very best critical faculty, the very best judgment, and, it is needless to aid, monumental industry. This brain tumor problem, as we view it even to-day, is a most perplexing one. And yet, if we for a moment reflect on the fact that the entire subject is in a modern sense not more than forty years old, and that the greater part of our exact information has come to us only in the past decade or two, we may point with pride to our activities and advances in this field. Particularly is this true of the surgical achievements, prior to which the studies in cerebral localization and topography were the concern chiefly of the physiologists, and confined to the lecture room and laboratory. The practical importance of their earlier labors have been borne in upon the general practitioner only since the surgeon has given proof of the operative possibilities within the skull.

From clinical premises brain tumor symptoms not infrequently bristle with uncertainties and contradictions. At least, this is the impression that I have gained from the literature, from general discussions and a limited personal observation. If we revert for an instant to the remarks made by Dr. Spiller as to the value of epileptic seizures, of the phenomena due to secondary hydrocephalus, of the misleading symptoms that may arise from the gliomata, we have enough to ponder and make focal diagnosis indeed difficult. Now, when we add to these confusing factors others which, for lack of better understanding, have been classified under the elastic name of pseudotumor cerebri, we are, in a way, mystified. I think this particular group designated by Nonne as pseudotumors, in which tumor symptoms appear in their most classic form without the least pathologic evidence thereof at autopsy, have not received sufficient emphasis in the paper just read. May I venture the opinion that cerebral arteriosclerosis, when present, may so closely simulate the picture of brain tumor that in these cases of pseudotumor it is the responsible underlying factor for the tumor syndrome? This is a chapter concerning which we are still much in the dark.

If we accept the statement made by Collier in *Brain* not so very long ago, that all the cerebellar tumors observed during a period of five years at the National Hospital, London, were properly localized *intra vitam*, as shown both at the time of operation and necropsy, and add to that testimony some of the brilliant successes recorded only within the past year or two in an intracranial field formerly regarded as wholly inoperable, the hypophyseal region, we have increasing good cause to be optimistic.

So far as my personal experience is concerned, it has been limited, but interesting and instructive. I am sure I have thought hard and long about the brain cases I have seen, and probably have been more often disappointed in my conclusions than pleased. I observed a patient last December in whom the autopsy finding was almost identical with the one shown on the screen by Dr. Cushing as a large glioma. The specimen I refer to was about the same size as the one shown to-night. The patient was a woman, sixty-odd years of age, whose symptoms came on, developed and remained stationary until the date of her death, all within the period of six weeks from onset. There was mixed aphasia, a Babinski sign and slight paresis of the right leg. The post-mortem examination revealed a glioma filling the largest part of the middle of one hemisphere, entirely occluding one of the lateral ventricles, leaving the other greatly distended. This case emphasizes the teaching that large gliomata may occur without interfering with the continuity or function of the nerve fibers embedded in the tumor mass.

Dr. Spiller's paper appeals to me as a commentary on the atypical symptoms in brain tumor. He has departed from text-book traditions and viewed the subject broadly and critically. In his recommendation of the cases that should come for operation he is wisely conservative. He does not omit to credit syphilis with its wide range of possibilities in the brain and the proportionate amount of good that may follow the adequate administration of antisyphilitic therapy.

The brain surgeon takes the attitude, and justly so, that cases of tumor should be brought to him in their earliest stages. Much has been written concerning the advisability of such early reference. I, too, share in the belief that whenever it is possible to diagnose a brain tumor early, from primary focal symptoms that are perfectly clear, that may prove to be the best time for surgical intervention. It is a regrettable fact, however, that only seldom do we see the cases early, in the period of their onset. They come to us for diagnosis, clouded and obscured by secondary hydrocephalus, with symptoms referable to secondary pressure and often difficult to disassociate from those of primary focal importance.

I shall not detain you at greater length, since the hour is late and other gentlemen are to follow me in this discussion. I should merely like to add that with a more and more accurate neurologic localizing diagnosis, we may expect to find ourselves in a more comfortable attitude concerning the percentage of successful results from operative measures. The team work that has existed for some time in European centers, so splendidly typified by the work of Oppenheim and Krause in Berlin and emulated in the East, particularly in Philadelphia and Baltimore, if properly inaugurated here in Chicago, should be productive of better results than we have been able to obtain, if I may assume that we have only obtained indifferent results. We should always bear in mind, however, that of the cases terminating successfully only the smallest percentage really afford a good prognosis in the radical sense of that word. I should like to ask Dr. Cushing whether he concurs in the belief that 4 per cent. of the brain tumors that come to operation are entitled to be grouped as radical recoveries.

Dr. Hugh T. Patrick: Dr. Marvel let fall what probably was an inadvertent remark when he said that nowadays we do not pay so much attention to strict localization. Nowadays we pay more attention than ever to strict and accurate localization, and localization nowadays is more exact than it ever has been. But owing to the occasionally still existing and apparently inevitable inaccuracies of the best of localization by the most approved methods, we find we are not absolutely accurate, and so the surgeons have long since taken this to heart and have made a very large opening. One of the pioneers in this direction has been Dr. Cushing.

Dr. Spiller has said that the neurologist sees these cases early. He does not. It is the general practitioner who sees them early; the neurologist sees them later and the surgeon later still, in fact, often too late to accomplish much good. A peculiar misfortune I have in many of the deferred cases coming to me for diagnosis was that the possibility of brain tumor seems never to have been thought of. The headache from which the patient suffered was attributed to something else. The dizziness was attributed to something else. Ocular palsy was ascribed to

something else. And vomiting in particular was credited to something else, and likewise even focal symptoms. Tumor of the brain is not a very rare lesion. It occurs pretty often, and if we would just keep this in mind with a few of the classical symptoms, a great many more tumors of the brain would be recognized early and would be relieved either by radical operation or by decompression in time to really accomplish some good.

One other very common error, I think, is persisting too long with the antiluetic treatment, especially in a patient known to have had or who is reasonably supposed to have been infected with syphilis. There is no reason why a man who has had a chancre may not have a glioma or endothelioma or any other form of intracranial growth. Simply because he had, once upon a time, undisputed syphilis, the antiluetic treatment is persisted in long after the thing has been proven to be uttterly refractory. Sometimes, when there is no reason to suspect syphilis at all, the antiluetic treatment is given for the purpose of exclusion and is persisted in long after a reasonable period. Needless to say, during this period it should be pushed to the limit.

Another mistake I have seen rather frequently and have perpetrated myself, but one which should never be made, is overlooking a tumor in a patient who has been for years the subject of migrainous headaches, the headache which comes from the tumor being ascribed to the old migraine or thought to be a mere variation of it.

I was glad to hear Dr. Spiller mention the fact that glioma of the pons and medulla may exist to a tremendous extent without the death of the patient. It is certainly one of the pathologic marvels of the human body that a glioma, especially in younger people, of the pons or medulla, or both, may persist for a long time, may cause confusing symptoms at first, be entirely inoperable and invade these structures to an extent which seems to be absolutely compatible with life, though the patient lives for a long time.

Dr. Cushing, in speaking of the other possible diseases which might give rise to the symptoms ordinarily due to brain tumor, omitted to mention multiple sclerosis. Please allow a neurologist to note the obvious omission, for if there is anything which causes confusing cerebral or cerebrospinal symptoms, it is multiple sclerosis and there is no question that once in a while it simulates brain tumor.

Just a word about pseudotumor, because recently for the second time I have gone through the unfortunate experience of advising an operation on what seemed to be clearly a brain tumor. The first case came to autopsy. The physician at a distance, where the operation was made, got a post-mortem and wrote to me that there was no tumor found. We could not believe that he had good eyes, but he sent the brain and we were entirely unable to discover any sort of lesion whatsoever. Within a week I have had a young woman operated on for brain tumor who had all the clinical symptoms of it except choked disk or papilledema. No tumor was found, nor was there any evidence at operation of increased tension. I believe this case to be one of pseudotumor, although I do not know for sure because we have not had a post-mortem. It probably, however, is such a case and goes as one more bit of evidence to show that whereas the majority of cases of brain tumor are very easily recognized, and whereas in a large proportion of these cases the tumor may be absolutely accurately localized, in some instances the diagnosis of tumor itself is exceedingly difficult, in a good many cases exact localization is absolutely impossible and in some others, even when we seem to have every justification to make a diagnosis of tumor and to localize it, there is no brain tumor to be found at all.

Dr. William H. Wilder:—In speaking on the ophthalmologic side of this question, I wish to confine my remarks to the intraocular signs that are so frequently seen in brain tumor. For the changes taking place in the head of the optic nerve we have heard the term papilledema used by Dr. Spiller, a term that was suggested by Parsons, a well-known writer on the pathology of the eye. There is some question as to whether this term papilledema is any improvement on the old term of choked disc, the "stauungs papille" of the Germans, which seems to be quite expressive and non-committal, whereas papilledema would seem to indicate

that we have a lesion the result of an edema of the papilla, which may be true in some cases but not in all. The idea that the lesion is primarily an edema depends largely on the theory proposed first by Schmidt-Rimpler and Manz, that there is distention of the optic nerve sheath with the cerebrospinal fluid as a result of increased intracranial pressure. There are numerous instances, as has been shown by the illustrations we have seen this evening, where it is conclusive that this distention of the optic sheath is sufficient to explain all of the conditions, so that the theory of Schmidt-Rimpler and Manz, that there is a mechanical compression around the head of the optic nerve sufficient to cause internal congestion of the papilla, will explain the nature of these cases. But there are numerous cases which it is impossible to differentiate from an inflammation of the nerve, a true optic neuritis, which if intense is a papillitis. It is in these cases that we may quite easily fall into error. It is in these cases where the physician who is not an expert with the use of the ophthalmoscope, and I may even say the ophthalmologist, is liable to err in speaking of an early optic neuritis as a beginning choked disk. When the condition is far enough advanced and typical, there is no mistaking it and those who use the ophthalmoscope with any facility have no difficulty in recognizing it.

Again, in these cases of papillitis or choked disc we may have for a time a considerable swelling of the head of the optic nerve without very much impairment of the vision, unless it be involvement of the visual fields, as was well shown by Dr. Cushing, so that oftentimes the physician may be deceived if by inquiring of the patient whether or not his vision is lowered, he finds there is practically no impairment of central vision. Furthermore, this condition of papillitis may be present early in the history of a case of brain tumor, or may be delayed and not appear until near the end. These facts emphasize the importance of making early and repeated ophthalmoscopic examination in any case of suspected tumor of the brain.

Again, we find in papillitis or choked disc, even if it is of mechanical origin, after it has existed for a certain time, inflammatory changes that have taken place about the head of the optic nerve and in the adjoining retina, so that we have a true inflammatory process following upon this mechanical process of edema.

A matter that is extremely important in connection with the therapy of these cases is, that if the case is treated by decompression before this inflammatory change has supervened we may hope to give permanent relief so far as the condition of the eye is concerned and so long as we can reduce and keep reduced the intracranial pressure. I wish to lay emphasis upon this particular point because of the fact that if operation should be delayed and the condition of the optic nerve passes into this true inflammatory stage, then the damage may be more or less permanent.

There is one other point I should like to mention, and that is as to the relative value of choked disc or papillitis as a diagnostic measure. We must bear in mind that if we find a choked disc it is extremely suggestive. If in a given case of suspected intracranial growth we find no choked disk, we can place very little reliance on the negative finding.

Another very important point to remember is that we may have papillitis or choked disc occurring in other conditions as typical as in cases of intracranial growth. It may occur, for instance, and does frequently, in meningitis, in brain abscess, in hydrocephalus. More rarely we will find it in certain diseased blood states, and I have seen cases of anemia where papillitis was just as extreme as any I have ever seen in a case of cerebellar growth. We may have it also, although rarely, in cysticercus and in sinus thrombosis, and we may have it also in certain peculiar malformations of the cranium.

Furthermore, we should also bear in mind the relation of syphilis to the intracranial lesion that is causing the papillitis. In 200 cases of choked disk, Kampherstein found that 23 or 12 per cent. were dependent on syphilis, 8 gummatous meningitis, and 15 other syphilitic cerebral lesions. Schott, in 50 cases of choked disc examined, found a percentage of 17 of syphilitic origin, and Uhthoff, in examining 100 cases of papillitis, found that in 14 per cent. the lesions were

syphilitic, or at least showed evidences of intracranial syphilis. I bring up these points in connection with the matter of treatment of these cases with antiluetic measures either before or after the operation of decompression. In many of them I should say decompression was quite justified as an operative measure to reduce the swelling of the optic nerve, and after this has been done antiluetic measures should be instituted.

As to the very interesting observations that Dr. Cushing and Dr. Bordley have made in regard to the fields of vision in these cases, I only wish to say a word. These observations are extremely instructive, but one should not lose sight of the fact, in drawing conclusions from them, that we can frequently get inversion of the color fields in conditions of nerve fatigue. It is a question as to just how much reliance we can place on this as one of the valuable eye signs of brain tumor. As Dr. Cushing has properly said, formerly this would have been regarded as evidence of hysteria. We find it in conditions of marked nerve fatigue and in such cases as intracranial growths we might expect such nerve fatigue.

I wish to express my personal gratitude and thanks to these gentlemen for coming such a long distance to address this society, and I am sure we have listened with the greatest interest and profit to their valuable contributions.

Dr. L. L. McArthur:—These papers are so complete that they are scarcely open to discussion, containing as they do practically all we know in regard to this subject. Answering first with reference to the query made by Dr. Spiller as to exploration of the brain by puncture, preliminary to or exploratory to brain tumor and brain affections, I desire to respond by saying that ever since Roswell Park, twenty years ago, emphasized the Souchon puncture, then recently presented to the American profession, I have had so frequent success in its use as to urge its continuance, notwithstanding the arguments with regard to danger in its employment. There are men present to-night who have seen, for instance, an abscess in the silent zones detected promptly by a simple drill hole made through a minute puncture in the scalp and the insertion of the hypodermic needle. A hemorrhagic cyst has been found by this means, and I deem it quite feasible of employment, although at some risk to the patient. I cannot advocate going to the extent of some of the German physicians who have made the puncture under cocain, in their office, on patients sitting there awaiting examination, and that to the extent of reporting fourteen or fifteen cases so treated.

I desire to thank Dr. Cushing for calling my attention to a fact which I had not known, that the majority of cerebellar cysts are simply cystic dilatations in other tumors, particularly the gliomata. I have had two successful drainages or emptyings of cerebellar cysts, with recovery of the patients, who still remain well so far as I know. These cases occurred in the practice of Dr. Archibald Church. Emphasis should be laid very strongly on first securing, in the operation on a cerebellar tumor, relief of pressure by going close to the foramen for escape of cerebrospinal fluid. I have undoubtedly shortened the life of a patient before appreciating that fact, the cerebellum bulging through the open dura, with no possible means of reducing it. I have to take issue with what appears to be the advice as to the closure without drainage of all these brain operations. The question here is identical with that elsewhere, and will probably arouse discussion. Some will say no drainage, while others will say always drain. I believe there are occasions and cases where judgment will dictate the provision of an escape for an oozing which cannot be controlled at the time of operation, for the escape of blood that may accumulate through oozing from the bony wall or flap itself, and the formation of a clot which can be avoided by the use of a temporary drain of from 48 to 72 hours made of very small rubber tubing, or of what I usually employ, two or three silkworm-gut strands twisted into a rope.

Dr. J. B. Murphy:—The able papers presented by Drs. Spiller and Cushing and the demonstration by Drs. Gronnerud, Marvel and O'Donnell, are most instructive, the ground covered extensive, and their conclusions are the results of careful observations, keen analyses, and extensive experience. Discussing the subject from a practical standpoint, I wish to mention, parenthetically, the classification of tumors which I have found best adapted to my clinical work.

This classification of tumors, in the order of their frequency, is: 1. Tuberculoma. 2. Endothelioma. 3. Syphiloma. 4. Glioma. 5. Carcinoma; metastatic, most frequently from mammary carcinoma. 6. Cysts; traumatic (hemorrhagic and degenerative); parasitic (echinococcic, etc.). 7. Fibroma.

In addition to these we have the less frequent varieties, the angiomata, lipomata, teratomata, psammoma, etc.

A general analysis of the tumors shows that the most frequent are not of themselves the most destructive of life; that is, the tuberculomata, endotheliomata, are situated superficially, many of them originating in the meninges, not infiltrating but encapsulated and easily enucleated if their localization can be accurately determined. This is the most favorable side of tumors, though the most infrequent side.

The infiltrating varieties, gliomata, sarcomata and carcinomata, rarely have even approximately definite margins and will continue to be fatal lesions in the brain, as they are in other portions of the body, regardless of the advancement of our technic for their removal. They are, however, the least frequent, although the inoperable ones make a more lasting impression and accentuate in our everyday work, giving the impression that they are really more frequent than the statistics show.

The Self-limitations in the Growth of Tumors.—This is particularly true of the tuberculomata, less of the endotheliomata, frequent in syphilomata, rare in gliomata, common in cysts, never in carcinomata. The knowledge of this fact should force on us the importance of timely action to prevent the destructive effect of increased pressure during the development or continued growth of these neoplasms. The more recent experiences show that a larger percentage of the tumors are self-limiting in their growth and that a relief of the pressure avoids one of the most baneful conditions, that of blindness, due entirely to intracranial pressure. Within the last two years in Mercy Hospital we had four cases of this class in the hospital at one time. All recovered from the original disease by decompression operation without removal of the tumor.

The Diagnosis: Dr. Spiller and the neurologists in general can well be proud of the achievements in the localization of a large percentage of intracranial neoplasms.

While the focal or local symptoms of a number of these lesions are still obscure and probably will remain so for a long time, the analysis of the order of onset of symptoms, the comparative intensity, the varying relations of degree of involvement of motion, sensation and tactile sense materially aid in estimating whether the tumor is cortical, subcortical or central, and in locating the convolution which is involved. The symptoms are best divided into two great classes: 1. Pressure. 2. Invasional or local.

The first are common to almost all of the cerebral neoplasms and are practically always initiative. They are cephalalgia, emesis and papilledema or choked disk. To these are added the second: vertigo, hemiopsia (vertical and horizontal), homonymous hemiopsia, convulsions, paralysis, paresis and the pronounced head positions of the subtentorial tumors, which, with the clinical history, aid in determining the location and making some estimate of the probable pathology of the lesion. The persistent tendency of the head to turn to the opposite side to the lesion in cerebellar tumors has a positive diagnostic value, as shown by Gordon, and the increase of pain and vertigo when forced to the side of the lesion adds to the significance of the symptom.

From a practical standpoint, for the purpose of saving the greatest number of lives, for the purpose of avoiding most lamentable conditions that result from tumors, even worse than death, the early recognition of the symptoms of pressure, headache, nausea, vomiting and choked disc by the general practitioner is of the greatest importance. By the early recognition of these pressure symptoms he can call to aid the specialist who will localize the tumor in a large percentage of the cases, remove many of them, and if not removed relieve the pressure and thus the pressure symptoms and avoid the blindness.

The Technic: The technic of the operations has been so thoroughly dwelt on by Dr. Cushing that it is needless to mention it here, and indeed the technic is of minor importance in the surgery of the brain. The recognition of the early symptoms, the diagnosis of the location, the estimate of the pathologic lesion, the timely action of the general practitioner, specialist and surgeon, should be the dominating factors of the present stage of cerebral surgery. The limitations of technic are fairly well understood.

From our personal experience we would say that the area of cranial elevation in the past has been too small to admit of a thorough examination of the supposed field of invasion. The large "U-shaped" or quadrilateral osteoplastic flap made with beveled edge should be the uniform cranial opening. While in many positions it is much easier to trephine and remove the bone with a rongeur to enlarge the opening, the sequences of a removal of the bone permitting the development of a hydrocele or an encephalocele are very annoying and disfiguring to the patient who recovers and can even endanger his life as much as the original lesion.

I have under my observation at the present time four cases, three of decompression and one of removal of a tumor in which the deformity resulting from the resection of bone is most annoying, and two of the patients express themselves by saying they would rather be dead than have these deformities.

In the technic of decompression in the class of self-limiting tumors the restoration of the cranial conformation and its maintenance become very serious and important problems. It has been our custom in these operations to elevate a large section of bone, in some of them to interpose a fascia from the side to prevent the bone reuniting and permitting it to yield to the increasing cerebral pressure. It is, however, retained for the purpose of subsequent implantation, should that become desirable or indicated. In one of the decompressions under my observation, which was some two years ago, the tumor has apparently entirely subsided in its growth, but there is an enormous hydrocele as large as a croquet ball which I have been unable to control. I have operated on it and endeavored to close the opening but have failed. There is no protrusion of the brain. Indeed, on one occasion after spinal aspiration in this case all the excessive fluid was absorbed and there was a depression at the openings over both cerebellar lobes. In a subsequent operation, since this discussion, I operated, separating the dura from the scalp, allowed the fluid to escape and implanted a plate above the dura made up of six sheets of celluloid paper agglutinated and softened by acetone just before insertion, so that it was soft and as easily molded as wet pasteboard. It was inserted extradurally, was three inches in diameter and extended beneath the bony margin for one-half inch over its entire circumference. The scalp was sewn over this plate. The latter was held depressed for one-half hour until it hardened. It retained practically the exact conformation of the skull.

In decompression and exploratory operations the dura should be freely excised. The hemorrhage can be readily controlled during the operation by a "T"-shaped hemostat, which is the best for that purpose, and always subsequently controlled by a catgut suture. The bleedings from the pia, however, are not easily controled by mechanical means, and the discovery by Sir Victor Horsley that the placing of a fragment of muscle over a bleeding vessel of the pia produces hemostasis is an important one.

The subtentorial tumors are usually at the pontine angle, rarely in the cerebellar substance. The subtentorial tumor produces papilledema early and destroys vision with more speed and certainty than pretentorial tumors.

Decompression is indicated for: 1. Papilledema with impending optic atrophy. 2. Continued emesis. 3. Cephalalgia.

Pretentorial tumors are situated usually in the temporal fossa and may be bi- or unilateral. A large area of bone should be elevated or removed.

The life expectancy of decompression operations cannot be given without classifying the pathologic lesions causing the indication for it, which often cannot be determined at the time of operation. The clinical courses, however, show that

many of the growths or conditions causing the pressure symptoms subside permanently or at least for years, so that the patient is apparently well except for the blindness which is always avoidable by a timely operation.

The dangers in the operative procedure are hemorrhage from scalp, bone, veni Santorini, dura and pia. The elastic constrictor can often be applied advantageously to control the bleeding from the scalp. The T-shaped hemostat is far the best for the control of additional scalp hemorrhages. The iodoform, wax or tallow readily controls the hemorrhage from the bone surface and diploe. The dural hemorrhage can be stilled by a fine catgut suture, and the pial by catgut sutures or by placing a small shred of muscle fiber over the bleeding point. This has been used very effectually by Horsley. The fiber can be taken from any muscle in the margin of the wound.

After palpation the blunt probe or needle puncture of the brain occasionally leads to considerable hemorrhage; unless the tissues are grossly abused it is not alarming. The invaginating needle is the best for testing for cysts, as the needle opening does not become plugged with brain tissue before the cyst is punctured.

Collapse from the vasomotor disturbances due, as is generally supposed, to the loss of cerebral fluid, is often very alarming. The great divergence in the degree, in cardiac and respiratory depressions, is not explained by the change in the intercranial tension. The signs of impending death which so suddenly appear are often very perturbing. The patients, however, rally from this state or are brought out of it most rapidly by increasing the blood pressure through the intravenous injection of salt solution. We always have this at hand, and the best apparatus is an ordinary fountain syringe connected by a rubber tube with an exploring hypodermic needle.

After dividing the skin the vein can be picked up with two tissue forceps and the needle inserted through its wall, parallel to its long axis, without dividing the vein with the scalpel. By this method there is no loss of blood or time in starting the flow of saline solution. A simple catgut ligature can be thrown around the needle and vein and the latter ligated. The blood pressure should be fully restored before the patient leaves the table.

Infection following these operations is now a very rare occurrence; with the aseptic precautions essential for effective work a drain is rarely ever advisable. No serous surface tolerates a drain for any length of time without hazard. Gentlemen, I thank you for your attention.

Dr. Frank Billings:—I would like to ask whether it is necessary to give antiluetic treatment nowadays when we have the Wassermann test?

Dr. Spiller (closing the discussion):—Regarding the question of papilledema, to which Dr. Cushing called attention, I will say that this word has been considered by some to be more expressive than choked disk. If I am not mistaken, Dr. Cushing prefers choked disk, believing that it is due to an increase in intracranial pressure. The evidence at present is that while increase in intracranial pressure is a most important element, it is not the only element, as has been shown by Gowers in the last few months.

As to another point Dr. Cushing brought up, namely, hemianopsia being produced by a lesion of the occipital lobe, of course it will be produced if the lesion is not at the base of the occipital lobe. It is evident that the optic radiations extend to the base of the occipital lobe, and, as Dr. Cushing mentioned, a tumor there is likely to cause blindness before papilledema can be detected. I have seen gliosis to which Dr. Cushing has referred, involving the greater part of the spinal nerves.

As to the Wassermann reaction, while it is most reliable, I am not convinced that it is absolutely pathognomonic. It has been found in a few cases where syphilis was not present, and while it is of the greatest importance, if I suspected syphilis and did not get the Wassermann reaction, I should be inclined for a reasonable time to give the antisyphilitic treatment.

If I have given the impression, as Dr. Murphy seems to imply, that these cases are not diagnosable, I should like to remove that, because I am very certain in most of the cases a diagnosis of tumor of the brain, and in many of them a diagnosis of the location of the tumor, is fully possible.

Regular Meeeting, Nov. 24, 1909.

At the meeting of November 24 the following papers were read: "Pellagra, a Detailed Presentation of the Subject," by Passed Assistant Surgeon C. H. Lavinder, Washington, D. C. Discussion opened by James Nevins Hyde. The Doctor showed a large series of illustrative plates and slides. Discussion was continued by Drs. Willhite, Pollock and Hamill.

By Chas. Spencer Williamson: 1. "Unusual Case of Enterolithiasis; Patient Having Carried the Same for Thirty-five Years." 2. "Case for Diagnosis—a Medical Case."

By Dr. Emil Ries: 1. "Some Rare Cases of Goiter." 2. "A Very Small Carcinoma of the Uterus," with remarks as to the microscopic diagnosis from curetted particles.

By B. C. Corbus and F. G. Harris: "Practical Demonstration of the Principles and Technic of the Original Wassermann Reaction."

Regular Meeting, Dec. 1, 1909.

The following papers were read: By Edward F. Wells: "The Medical Aspect of Those Toxemias of Pregnancy Which Lead Toward Eclampsia."

Abstract: Some of the pertinent facts of etiology; of the anatomical changes in the kidneys, liver, thyroids, hypophysis, etc.; of the physiological departures from health, as shown in the urine, blood, tissue, lymph, intra- and extra-vascular circulation, etc.; relating to a therapeutical diagnosis; of the elements of medical management.

By A. J. Ochsner: "Thyroidectomy." (Illustrated with lantern slides.)

Abstract: The paper is a discussion of the selection of cases, the time of operation, the preliminary treatment and the dangers of operation, including anesthesia, hemorrhage, shock, hyperthyroidism, injury to the laryngeal nerve, parathyroid glands and trachea, and reference is made to the importance of after-treatment.

Discussion opened by F. A. Besley.

By S. Krumholz, "Treatment of Exophthalmic Goiter with Serum of Thyroidectomized Animals." Discussion opened by Sidney Kuh.

Abstract: 1. Theory upon which the serum treatment of this disease is based.
2. Review of literature on the subject.
3. Report of 14 cases under my observation and 12 cases of Dr. Sydney Kuh.
4. Conclusions: Therapeutic value.

By Axel Werelius: "The Pathology of the Thyroid and Hematology in 100 Goitrous Chicago Dogs."

Abstract: Haematology of dogs in general and in goitrous dogs. Types of canine thyroid. Pathologic conditions. Relative presence of goiter and type of struma in male and female. Relation between hyperplasia and colloid goitre to size of gland. Relation of size of gland in male and female. Lack of symptoms referrable to thyroid disturbance in strumous dogs. Demonstration of anatomic pathology in 20 goitrous dogs. Microscopic slides.

By W. J. Marvel: Demonstration, "Anatomical Preparations Showing the Various Steps in Brain Surgery and Brain Localization."

Regular Meeting, Dec. 8, 1909.

This meeting was a symposium on organotherapy. The following papers were read: By A. C. Crofton: "Historical Review and Critique."

Abstract: Antique and medieval organotherapy; accomplishments of modern organotherapy and some of its fallacies and inconsistencies; the outlook for organotherapy.

By C. E. de M. Sajous, Philadelphia, Pa.: "Adrenal Therapy." (By invitation.)

Abstract: Prevailing teachings as to the function of the adrenals are not such as to render possible an intelligent interpretation of the physiological action of adrenal preparations. Many of the phenomena awakened by the latter have remained unexplained. The function that the writer has ascribed to the adrenal secretion, viz., to take up oxygen from the pulmonary air and sustain metabolism as a constituent of the hemoglobin molecule, explains all these phenomena and also the familiar rise of blood-pressure. Brief outline of the facts which sustain this position. The diseases in which adrenal preparations have been found of value can be divided into three classes:

1. Those in which they compensate for functional incompetence of the adrenals; 2. Those in which they enhance the cardiovascular equilibrium; 3. Those in which they restore the respiratory equilibrium in the lungs and tissues, i. e., the vital process itself; and 4. Those in which they promote the efficiency of the immunizing process.

Conclusions as to the diseases in which adrenal preparations are superior to other available remedies, or in which their effects warrant further trial.

By George Schmauch: "Orchitic (spermin) and Ovarian Therapy."

Abstract: Genital glands were first to be connected with internal secretion. Most observations made on women, but seen by male eyes. Women with their periodical changes in the functional output of these glands, differ vastly from man. Always ready objects for the mutilating operations of the too willing surgeon. Specific influence of the germinal glands on the somatic development. Their antagonism to other ductless glands. Periodicity in woman's life. Menstruation and ovulation two different phenomena. Castration does not produce the opposite sex, but an asexual form. Difference in the validity of testicles and ovaries and their interstitial cells. The ghost of the so-called small cystic ovaries. Removal, transplantation of ovaries; orchitic therapy and use of ovarian substance.

By James B. Herrick: "Thyroid and Thymus Therapy."

Abstract: Necessity for more extended experimental, laboratory and clinical observation before the action, possibilities for good and evil, and limitations of thyroid extract are well established. Various preparations. Physiologic and toxic action. Its use in myxedema of various types; cretinism; infantilism; simple goiter; exophthalmic goiter, obesity; skin diseases; diseases of bones. Other uses. Conclusions.

By Max Reichmann: Demonstration, "An Easy and Simple Method of Taking Roentgenograms of Dense and Thick Parts of the Body."

Abstract: By using Dr. A. Kohler's method of two plates put together in one exposure and viewing them in a way to be demonstrated, a clear and definite picture can always be obtained.

By W. H. Ballenger: 1. "Presentation of Seven Cases of Frontal Sinusitis Operation; Four by the Killian Method; One by Kuhnt-Luc; Two by Denker." 2. "One Case of Laryngostomy for Stricture of the Larynx."

Regular Meeting, Dec. 15, 1909.

The following papers were read: By Coleman G. Buford, "The Non-Operative Treatment and the Truss Question of Hernia."

Abstract: Both neglected topics. Not opposed to radical cure by operation when there is no contraindication. Physicians should, themselves, measure patients for trusses, indicate pattern desired, fit and readjust trusses. Varieties and choice of trusses. Their manufacture. Use of trusses as aid in differential diagnosis especially when there is a relaxed internal ring with no perceptible visceral protrusion. Hernia of infants and the use of trusses among these.

By E. S. Judd, Rochester, Minn.: "Indications for Herniotomy." (By invitation.)

Abstract: More satisfactory to operate early upon young children when there is no disability period, thus saving the mother the anxiety and care incident to this condition. This is especially true since a large percentage of the cases will be forced to operation later. Much safer to operate during adult life than to follow any other line of treatment. Operate in old age if general condition of the patient warrants it.

By Paul Gronnerud: "Demonstration of Operations on Specially Prepared Cadaver."

Abstract: Demonstration of relational anatomy on specially prepared cadaver. Various forms of hernia: Indirect, direct and femoral. Types of operative procedures; Kocher, Bassini, Ferguson and Andrews modification. Diagnostic differential demonstration between direct, indirect, and femoral hernia.

By J. C. Goosmann: "Demonstration; CO_2 Equipment and CO_2 Ice Crayon."

Abstract: Practical demonstration of the principles and technic with a complete Liquid CO_2 equipment and the Goosmann CO_2 Ice Crayon to crystallize, compress, and shape solidified Carbon Dioxid for therapeutic purposes.

Regular Meeting, Dec. 22, 1909.

The following papers were read: By A. C. Cotton: "Masturbation and Pseudo-masturbation in Infancy and Childhood."

Abstract: Questionable differentiation. It the practice increasing? Report of cases. Some points in the etiology, pathology and treatment.

By I. A. Abt: "Survey of International Movement Concerning Infant Welfare."

Abstract: Infant morbidity and mortality is receiving international attention. Birth rate tends to decrease while infant mortality is excessive. In 1892 Budin organized first consultation for nurslings at the Charité; attracted widespread attention. Experience of Kellar, Lindemann, and Breuche at Magdeburg. Infant hospital at Düsseldorf, under the direction of Schlossman and the new Kaiserin Augusta-Victoria under Kellar and Langstein have been established in the hope of reducing infant disease and death. Experiences in England and America. Institutional care and outdoor treatment and consultations. Importance of breast milk in diminishing death rate. Importance of clean milk for artificial feeding. Importance of special training for physicians and nurses.

By J. W. Van Derslice: "Diagnosis of Rachitis."

Abstract: The use of the term rachitis is now rather loose. In general use the term as now used applies both to the disorder and to its resultant deformities. Rachitis is a dystrophy with a distinct symptom complex and for this condition only should the name rachitis be given. Importance of early diagnosis manifest as at this time can remedial agents best be used.

Discussion opened by Julia D. Merrill.

By William J. Butler: "Enteroptosis, in Children."

Abstract: Brief review of literature of enteroptosis. Local anatomical changes in position of abdominal organs part of a general habitus. The latter is recognized by a more or less characteristic body form. Clinical symptoms associated with sinking of abdominal organs. Occurrence of the habitus enteroptosis in children. Frequency of displacements. Periods of stress operative in bringing about splanchnoptosis, etc.

Discussion opened by R. R. Smith, Grand Rapids, Mich.

By F. W. Allin: "Baby Tent Idea."

Abstract: Organized effort to save the baby is relatively a recent thing. The Fresh Air Wharfs of New York and the Fresh Air Sanatoria of the Lake Front are among the first efforts to relieve the congestion of our great cities for the little folk. Its origin, its development, its spread to other cities. Its success.

By Wm. A. Pusey: "Demonstration; A Practical Demonstration of the Making of CO_2 Ice Crayon."

CHICAGO SURGICAL SOCIETY.

Regular Meeting, Nov. 5, 1909.

A regular meeting was held Friday, Nov. 5, 1909, with the president, Dr. Arthur Dean Bevan, in the chair.

Dr. A. E. Halstead reported a case of pulsating exophthalmos. The patient was Mr. B., aged 24 years, by occupation a farmer. He first came under observation on Aug. 27, 1909, when he was admitted to the Illinois Charitable Eye and Ear Infirmary. The following history was obtained: On Jan. 27, 1909, the wheel of a loaded wagon passed over the patient's head, just back of the left eye. The patient was unconscious for three days following the accident. So far as he could tell, the eye bulged much more at that time than it did when he entered the infirmary, the left eye turning sharply towards the nose. The eye appeared paralyzed, the lids were swollen and he could not close the upper lid, move his jaw or tongue or swallow. Roaring noises synchronous with the heart beat could be heard from the time the patient regained consciousness until he entered the hospital. He remained in bed two weeks following the accident, and during that time the sight in his left eye was very much impaired.

An examination of the left eye was made August 27. The left eye turned in 45°. The eye was very prominent and two-thirds of an inch farther forward than the right eye. The veins on the outside of the upper lids were very large and tortuous. The blood-vessels of the sclera were also enlarged, in its center there was a fairly dense cicatrix. The anterior chamber was shallow, the iris not quite perfectly round, but normal in color. Vision at this time in right eye, 20/30—3; left eye, 20/120. On September 28 the vision was again taken, when it was found to be 20/20 in the right eye and 20/50 in the left eye.

On October 10 the patient entered St. Luke's Hospital, and was referred to Dr. Halstead's service. At this time the left eye protruded forward, and deviated inward. The blood-vessels of the eyelid and eyeball were enlarged and tortuous; a pulsating tumor could be felt over the lid and in the inner angle of the eye; a bruit could be heard over the left temporal region and the patient complained of constant roaring noises, heard most distinctly in the left eye, and synchronous with the heart beat. On October 14 Dr. Halstead ligated the left internal carotid near its origin. An incision was made along the anterior border of the sterno-cleido-mastoid muscle. The blood-vessels were exposed and the internal carotid artery identified by making traction on a ligature passed around it, and feeling for the pulsation in the orbital tumor which had disappeared. The artery was now doubly ligated with chromicized catgut, and the skin closed with silk-worm gut. October 15, the day following the operation, the exophthalmos was not so marked as it was before the operation; the bruit had disappeared and a very slight pulsation could be detected only at the inner angle of the left eye, while the head noises and ringing in the ears were absent. October 16 the patient complained of constant pain in his left eyeball. October 18 the bruit remained absent, the pulsation at the inner angle was scarcely perceptible, the exophthalmos had slightly decreased. The patient complained of stiffness of the lower jaw. Up to the present time there has been no return of the bruit or head noises. The left eye still turns inward; there is some exophthalmos and the patient occasionally complains of pain in the left eye.

Dr. Edward H. Ochsner reported a case in which he extracted a bullet from the hip-joint. A probable diagnosis of bullet in the joint was made from the history and from the fact that the skiagraph showed the bullet in different locations at different periods. It did not seem possible that so large a bullet could travel such a distance unless it were within the capsule. He called attention to the importance of absolute immobilization during the healing of a joint injury. He believes that in such cases fair motion will be obtained in a very much larger percentage of cases by securing absolute immobilization than by resorting to the often recommended early, active and passive motion.

Dr. John E. Owens said that a few years ago he had a case somewhat like that reported by Dr. Ochsner, except that the bullet went in on the outer aspect, just below the anterior-superior spine. The bullet lodged in the upper portion of the neck, along the outer segment of the circumference of the head of the bone. The bullet was removed with considerable trouble, but he regretted to say that, having lost sight of the patient, a report of the condition of the joint could not be given.

Dr. Owens then reported a series of cases in which there were injuries to the elbow joint, and drew the following conclusions: 1. Such results are better than a tender and painful joint, and also better than a stiff arm in any position, and better than one whose motions are decidedly limited. 2. Resection is also an economy of time. 3. That the varied and complicated injuries at and near the elbow joints render diagnosis in many cases extremely difficult. 4. Dislocation of the head of the radius is frequently overlooked, especially if associated with a fracture in the upper fourth of the ulna, and such a dislocation should be expected where this fracture exists, and if the dislocation in question is present a fracture in the upper fourth of the ulna should be expected. 5. That a useful arm is to be expected if excision is properly performed. 6. That any dislocation of the upper end of the radius and the ulna of one or more of the combining constituents of the joint is to be looked for. 7. That errors in diagnosis are not confined exclusively to men of moderate experience, but the most experienced and successful cannot claim immunity.

Dr. Daniel N. Eisendrath said there is one point which Dr. Owens referred to that he believed is generally overlooked in these fractures close to the elbow joint, and that is the frequency with which these injuries are accompanied by severing or contusion of the nerve trunks of the radial, ulnar and median nerves. In a great many cases median and ulnar nerves are not severed, but are stretched across the end of the upper fragment in such a way as to produce symptoms similar to the actual severing of the nerve.

He saw recently, within the last week, a case of undetected, musculo-spiral paralysis following one of these comminuted fractures close to the elbow joint. It was a case where a doctor was being sued for malpractice on account of this injury to the musculo-spiral nerve following a comminuted fracture, and no effort was made at the time of setting the injury to avoid nerve injury, and no information given the family that such a thing had occurred, and no complaint made afterwards. He believes we are apt to think that nerve injuries can occur chiefly in the middle shaft, and overlook the fact that they are not so very rare at the lower end.

Dr. S. C. Plummer spoke of a typical case of excision of the elbow joint, where the functional results quite surpassed his expectations. The man was a switchman, who slipped and fell with his arm across the rail, and he said the car ran over his arm at the elbow. He does not believe this account of the injury, but rather that the car ran over the point of the elbow. The man's injury was a compound, comminuted fracture at the lower end of the humerus, leaving the forearm bones in contact. The muscles at the lower end of the humerus were all pulpified, fragments of bone hanging by shreds of muscles, and portions of ligaments. The ulnar nerve was entirely exposed for about four inches, standing out as if it had been dissected. The loose pieces of bone were removed, and the humerus sawed off. The ulnar nerve was covered with fascia and there were never any symptoms from the ulnar nerve. This man got a wonderfully good functional result, so good that he pleaded to be reinstated as a switchman.

Dr. Arthur Dean Bevan said that about six years ago, before the Surgical Section of the American Medical Association at Atlantic City, he reported four or five cases of elbow-joint injuries, limited, however, to dislocation, which the *x*-ray showed in every instance to be complicated with fractures. He operated on all of those cases and found that on exposing the joints and removing the fragments of bone which locked the dislocation and prevented reduction the joint recovered its function, if this was done early, within two or three months. In the really ancient cases in which the dislocation had existed for a number of months or a year or more, after the reduction he obtained a stiff joint in spite of passive motion and the breaking up of adhesions under an anesthetic. In two cases, instead of making a reduction, he made a resection of the lower end of the humerus, and obtained a very good functional result. His experience confirms that of Dr. Owens.

Dr. Daniel N. Eisendrath read a paper entitled "Ileus Due to Meckel's Diverticulum."

Dr. Wm. N. Harsha asked Dr. Eisendrath if a vaginal examination was made in this case, to which Dr. Eisendrath replied, "Yes."

Dr. Harsha said that in a case he reported to this society three or four years ago, a vaginal examination showed a distinct tenseness that would lead one to suspect a distended gut. The form was different in that the direction was directly downward from the ileum, and the terminal ligaments only two and a half or three inches long, reaching directly over the ileum, and attached to the mesentery of the ileum. In that case there had been two or three abdominal crises that had passed off without any serious consequences, and had not produced complete obstruction. When she was operated on the bowels had been obstructed almost completely for four days, with intestinal vomiting. He believed the differences in the symptoms in partial or complete obstruction are mainly the appearance of the patient, showing more or less profound disturbance, and the range of temperature, the temperature remaining subnormal longer in partial than in complete obstruction, owing to the delay in intra-abdominal infection. He thinks a rectal examination in these cases gives one an idea of the intestinal distention which would help to differentiate it from appendicits or other inflammatory conditions.

Dr. L. L. McArthur said, as illustrating the difficulties of diagnosis of ileus, caused by Meckel's diverticulum, he recalled a case seen in conjunction with Dr. Billings, in which he held firmly to the diagnosis of appendicitis, and the speaker to intestinal obstruction by band. The case became so desperate that operative interference was required. His inclination to fortify the diagnosis led him to

sweep his hand underneath the umbilicus immediately on opening the abdomen, and this band was found. The band had caught the appendix close to the caput coli, cut through it, and permitted a leakage with septic ileus as a cause of the intestinal obstruction. Dr. McArthur reported a second case.

Dr. A. J. Ochsner said regarding the diagnosis in cases of intestinal obstruction, that unless one has a definite reason for supposing the obstruction to be caused by some condition on the left side of the abdominal cavity, he believes the rule Dr. Eisendrath laid down is not good because about 80 per cent. of obstructions come from conditions in the right side. In some instances the condition may seem to be due to a mechanical obstruction and still be due to a perforated gall-bladder or duodenum, or even a perforation of an ulcer in the pylorus, just at the duodenal end, or it may be due to intussusception. The condition may be due to inflammation of the appendix, Meckel's diverticulum, perforation of a typhoid ulcer, perforation of the duodenum, gall-bladder, and pyloric ulcer. All these conditions he has seen in cases which were diagnosed as intestinal obstruction, and all these cases could be best discovered through an incision, splitting the right rectus abdominis muscle.

Dr. A. E. Halstead said he has been struck regarding the statistics of Meckel's diverticulum. It is well known they are found at autopsy in 2¼ to 3 per cent. of all cases. Statistics also go to show that nearly 5 per cent. of all obstructions occur from Meckel's diverticulum. He has seen only three altogether, one produced obstruction, one perforated with typhoid fever, and one found accidentally, that did not cause any symptoms.

Dr. Eisendrath, in closing the discussion, said that the experience of those who had spoken was very much the same as his own. The majority of these cases are not recognized before operation. He has had no experience with the Monihan method, but he can speak from personal experience with regard to the value of enterostomy. He has had three cases of intussusception in children. Two of them he lost in trying to do a resection. The children were not in any condition to stand resection. The third one was in just the same kind of condition. He did at first an enterostomy and later on a resection. He believes either enterostomy or cecostomy in these cases is indicated if we cannot do anything more radical.

Dr. Dean D. Lewis read a paper on "Multilocular Cysts of the Jaw."

CRAWFORD COUNTY.

The regular bi-monthly meeting of the Crawford County Medical Society was held in the Carnegie Library, Nov. 11, 1909, at 1:30 p. m. The meeting was called to order by the president, Dr. N. F. Lindsay, and the minutes of the previous meeting were read and adopted. The following members were present: Drs. Price, Cato, Firebaugh, Vanatta, Carlisle, Smith, Mitchell, Kirk, Midgett, T. N. Rafferty, Durham, Lindsay, Lowe, Jones, H. N. Rafferty and Meserve. The committee appointed at the last meeting concerning Dr. F. reported. The report was adopted and the committee discharged. A communication from Dr. E. W. Weis, containing a list of lecturers who have offered their services to lecture before the county societies, was read, and on motion the matter was laid on the table. A paper, "Report of Cases," was read by Dr. H. N. Rafferty. The report consisted of several interesting cases with which the doctor has come in contact in his private practice. After the discussion of the paper, on motion, the society adjourned.

A. LYMAN LOWE, Secretary.

DOUGLAS COUNTY.

The Douglas County Medical Society held their regular quarterly session in the Knights of Pythias Hall, Thursday, Nov. 18, 1909. The president, I. W. Hall, of Camargo, presided. Other members present were: Drs. W. A. Wiseman, H. I. McNeil, F. T. McClain, W. C. McKinney, O. M. Slater, Charles V. Eads, W. F. Rice, John Ewing, W. S. Martin, F. W. Eskey, E. O. Little and W. C. Blaine.

The minutes of the last quarterly session were read and approved. The secretary-treasurer's report was read and received by the society. Dr. Little of Hume was accepted as a member by the Board of Censors on presentation of a card from the Marion County Medical Society, signed by its secretary of 1908, also recommendations of J. H. McCain of Arcola, provided he was recommended by the profession of his city. The following resolution was passed:

Resolved, That the Douglas County Medical Society extend to Dr. J. L. Reat its profound sympathy on account of the serious illness of his estimable wife.

Dr. J. L. Wiggins of East St. Louis, president of the Illinois State Medical Society, gave a very interesting talk on the subject, "Some Excusable Mistakes in Diagnosis." Dr. Wiggins was then asked to talk on "Medical Organization," after which the society voted him a vote of thanks.

The following officers were elected for the year 1910: President, Dr. John Ewing, Tuscola; vice-president, Dr. N. C. McKinney, Murdock; secretary-treasurer, W. C. Blaine, Tuscola; censors, W. A. Wiseman and I. W. Hall, both of Camargo, and W. E. Rice, Tuscola; medicolegal representative, W. E. Rice, Tuscola; medical legislative representative, Dr. Cyrus Rutherford, Newman.

The retiring president then appointed a committee consisting of Drs. H. I. McNeil, B. R. McClain and W. C. Blaine, to act in conjunction with the Tuscola Woman's Club in arousing interest in an antituberculosis meeting which is to be held in Tuscola, Jan. 7, 1910, at which a public address will be given by the president of the National Antituberculosis Association, Dr. Walter Metcalf of Chicago. Dr. N. C. McKinney then presented a case, for diagnosis, of ulcerated scar tissue following a burn some eight years previous. Dr. W. A. Wiseman of Camargo presented a case of sarcoma of the leg. There being no further business, the society adjourned to meet the first Thursday in January.

W. C. BLAINE, Secretary-Treasurer.

THE FOX RIVER VALLEY MEDICAL ASSOCIATION.

The Fox River Valley Medical Association held its eighty-eighth semi-annual meeting in Aurora, November 9. The morning or surgical paper was presented by Dr. Cassius C. Rogers of Chicago, on "Diagnosis of Intracranial Surgical Diseases." The medical paper, in the afternoon, was "Meningeal Infections in Infancy and Childhood," by Dr. Samuel J. Walker, also of Chicago. Both gentlemen were made honorary members of the association and heartily thanked for their excellent papers. The annual election resulted in the election of the following officers for 1910: President, E. H. Abbott, Elgin; vice-president, C. H. Franz, Aurora; secretary-treasurer, Wm. H. Schwingel, Aurora; delegate, J. W. MacDonald, Aurora; alternate, F. H. Jenks, Elgin. The following committeemen were elected for three years: Board of censors, Wm. P. Sherman, Aurora; executive committee, F. H. Jenks, Elgin; A. A. Fitts, Batavia, to complete Dr. Read's unexpired term of two years; program committee, R. G. Scott, Geneva; necrology committee, J. A. Rutledge, Elgin. The following doctors were elected to memberships: Frederick Bauer, Dundee; Frank W. Griffith, Elgin; G. F. Ruppert, Elgin; Robert S. Denney, Aurora, and Carl P. Struve, South Elgin. Two members were received by card, C. D. Jones, from the Chicago society and A. R. Satterlee, from the society of Erie county, New York.

Geneva was designated as the next quarterly meeting place and the executive committee was instructed to select, if possible, some place in McHenry county for the mid-summer meeting. GEO. F. ALLEN, Secretary-Treasurer.

GREENE COUNTY.

The Greene County Medical Society held its quarterly meeting in the parlors of the Hotel Roodhouse, Friday, December 10, at Roodhouse, Ill. Dr. Burns of Whitehall, president of the society, called the meeting to order. The following officers were elected for 1910: President, Dr. A. W. Foreman, Whitehall; vice-president, Dr. H. W. Smith, Roodhouse; secretary and treasurer, Dr. H. A.

Chapin; censors, Drs. E. K. Shirley, E. H. Higbee and Howard Burns. Dr. Geo. N. Kreider of Springfield, editor of THE JOURNAL, read an excellent paper on "Appendicitis and Conditions Simulating Appendicitis." This paper brought forth conditions which may exist and that are not generally known. The paper was well received and discussed and very much appreciated. The society then adjourned for dinner, which was excellently served at the Hotel Roodhouse. Dr. C. R. Thomas then read a paper, "Bronchopneumonia." The paper was freely discussed and was highly complimented. Dr. A. W. Foreman of Whitehall gave a very interesting talk on "Malaria," relating his experience with this disease during his early practice. He questioned very much the assertion that malaria was always caused by the bite of the mosquito. The meeting was one of the best ever held by the society. Those present were. Drs. J. W. Adams, E. S. Gooch and Howard Burns of Carrollton; Drs. A. W. Foreman, E. K. Shirley, H. W. Chapman, F. N. McLaren and G. W. Burns of Whitehall; Drs. L. O. Hamilton, H. W. Smith, E. H. Higbee, W. L. Kincaid and C. R. Thomas of Roodhouse, and Dr. Geo. N. Kreider of Springfield. The society adjourned to meet next March at Whitehall.

JACKSON COUNTY.

The fourth quarterly meeting of the Jackson County Medical Society was held in the parlors of the Jackson Club, in Springfield, Dec. 16, 1909. Those present were Drs. Ormsby, Roth, Sabine, Carter, Molz, Grizzell and Essick of Murphysboro; Drs. Mitchell, Etherton and Neber of Carbondale, and Dr. Horstman of Vergennes. Visitors: Drs. Lightfoot of Carbondale, Galbraith of Clifford, and Bartlett of St. Louis. Dr. Etherton of Carbondale notified us that Phemister was still doing illegal vending in Carbondale, despite the fact that the secretary had informed Dr. Egan in September of his practices. The secretary was instructed to again write Dr. Egan of this matter. The application of Dr. H. M. Daniel of this city was read and the same given to the board of censors for three months' consideration. Dr. Earnest Neber of Carbondale was declared a member, his application having been presented in September. It was moved by Dr. Mitchell and seconded by Dr. Neber, both of Carbondale, that the next meeting be held in that city. Carried. The following officers were elected for the ensuing year: President, Dr. A. R. Carter; vice-president, Dr. C. C. Grizzell; secretary-treasurer, Dr. Ray B. Essick; censor, Dr. H. H. Roth; delegate, Dr. C. O. Molz; alternate, Dr. R. S. Sabine.

Program: A case of "Suspected Goiter," presented by Dr. Horstman of Vergennes. The case was examined by all present and the discussion opened by Dr. Willard of St. Louis. A case of "Progressive Spastic Paraplegia" and also a case of "Epithelioma of the Ear," presented by Dr. Molz of Murphysboro. A case of "Exophthalmic Goiter," presented by Dr. Sabine of Murphysboro. Dr. Willard Bartlett of St. Louis read a very interesting paper on "The Surgical Treatment of Exophthalmic Goiter," in which he gave numerous precautions to be taken both in the operation and after-treatment. Later Dr. Bartlett extended an invitation to the physicians to witness a nephrectomy at his hands in St. Andrew's Hospital. Quite a number of the gentlemen attended and enjoyed the instruction.

RAY B. ESSICK, Secretary-Treasurer.

JEFFERSON COUNTY.

At the October meeting of the Jefferson County Medical Society it was decided to invite the school board, teachers in the public schools, city council and the general public to an open meeting of the society on Thursday, November 18, at 7:30 p. m., for the discussion of "school sanitation."

This meeting was called to order at the time set by the president of the society, Dr. J. T. Whitlock, at the Elks Hall, Mt. Vernon, with 125 persons, representing the school board, teachers, city officials, ministry and the medical profession,

present. After the minutes of the last session had been read and approved the society enjoyed the following program: "The Physical Condition of Mt. Vernon School Children," Dr. J. W. Hamilton. Dr. Hamilton, as president of the school board, had handed a list of the following questions to each teacher: 1. Number enrolled. 2. Number appearing healthy. 3. Thin and poorly nourished. 4. Having cough. 5. Noticeable mouth breathers. 6. Defective eyes of any kind. 7. Nasal twang to speech. 8. Extremely sluggish. 9. Defective teeth. 10. Sent home for sickness each month. 11. Number of contagious diseases. 12. Cubic feet of air to each pupil. Dr. Hamilton reported the conditions by grades, and the grand total, which is as follows: Number enrolled, 1,609. Healthy, 931. Thin and poorly nourished, 243. Cough, 135. Mouth breathers, 170. Defective eyes, 308. Nasal twang, 160. Extremely sluggish, 187. Defective teeth, 731. Sent home for sickness, 77. Cubic feet of air to each pupil, 218. These figures were, of course, taken from the untrained observation of the individual teacher and would probably be increased if these children could be examined by a trained observer.

"Defective Vision in School Children," by Dr. George Tupper, was the next paper on the program. Dr. Tupper took up the various conditions that are common among this class of patients and told how they might be recognized and what should be done to change them.

"Preventive Medicine," by Dr. Andy Hall, was next on the program. Dr. Hall dealt largely with quarantine and disinfection as they exist in this community at the present time and in a way which all present could understand explained the great harm that comes to children suffering from adenoids and advised examination and treatment of all suspected cases.

These papers were read and discussed together. Many representative men and women took part in a free discussion and the society feels that a step has been taken in the right direction. The original cause for this open meeting came before the society during the discussion of a paper entitled "The Symptoms and Treatment of Scarlet Fever," which was read by Dr. Andy Hall in the October meeting. At that time the very lax condition of quarantine and disinfection which prevails in Mt. Vernon at the present time was freely discussed and led to the appointment of a committee of five to confer with the mayor of the city to devise some means whereby these conditions can be made adequate. This committee will meet in a short time and the medical profession of this community is satisfied that there will be a radical change made in the near future.

The meeting on the 18th was a success in every way, and we feel that untold good will come from the efforts of the profession to educate the public. This is only a beginning, however, and from time to time the public will be invited to meet with their medical advisors for the discussion of subjects that are vital to the well being of the vicinity. W. H. GILMORE, M.D., Secretary.

LAKE COUNTY.

The meeting of the Lake County Medical Society was held at the Gables, Waukegan, Nov. 8, 1909. A report of correspondence concerning the Osteopathic Bill was read. The following program was given: "A Report of Two Cases," by Dr. J. C. Foley, of Waukegan. One was a case of papilloma that had been diagnosed as pregnancy; the other, complete obstruction of the bowel by Meckel's diverticulum becoming adherent following an operation for appendicitis and causing a twisting and finally acute angle of the bowel which resulted in obstruction. The case was reopened, diverticulum was released from its adhesions and the case recovered.

"Modern Repair of Cervix and Perineum," by Dr. F. L. Gourley, of Waukegan; a most carefully prepared paper which was supplemented by demonstrations with putty and blackboard drawings which gave not only plain demonstrations of the methods of the best authors but also his choice of methods with reasons for same. The paper was discussed by Drs. Tombaugh, Foley and Gavin.

"My Impressions of European Hospitals," by Dr. Elva A. Wright, of Lake Forest. Most valuable information was given, especially to those anticipating postgraduate work in Europe. The hospitals of England were especially commended but the hospitals of America far excel those of Europe not only in their modernness but also in their management.

"Water and Sewage Supply of Lake Shore Lake County Towns," by Dr. W. C. Bouton, of Waukegan. This paper will be of great value because of its data to those who have in charge the correction of errors along this line in this community.

Dr. Beatrice Pearce Dickinson, of Sulzer, Alaska, then told us of her work in the icy north and showed many photographs to illustrate her talk. A special vote of thanks was given to those who took part in the program, and it was suggested by the president that Dr. Bouton's paper be at least extracted if not printed in full in the local papers. Those present were: Drs. Taylor, Tombaugh, Kalowsky, Gavin, Beatrice Pearce Dickinson, Bouton, Gourley, Bellows, Fuller, Churchill, Elva Wright, Watterson, Hageman, Roberts, Foley and Grant.

W. H. WATTERSON, Secretary.

LAWRENCE COUNTY.

The Lawrence County Medical Society held their annual meeting in the Masonic Hall in Bridgeport, Monday, December 6, at 2 p. m. The following members were present: Drs. Bryant, Lewis, Trueblood, Gore, Funk, Gordon of Lawrenceville, McMurray of St. Francisville, Hockman, Green and Gideon of Sumner, Petty of Chauncey, Montgomery of Birds, and Thompson, Schrader, Lewis, Kell and McAdoo of Bridgeport. Visiting physicians: Dr. Newcomb of Champaign, Drs. McCoy and Schmadel of Vincennes, Dr. Weber of Olney and Dr. Hill of California. The following papers were read and discussed at this meeting: "Early Diagnosis of Appendicitis and Technique of Operation," Dr. W. L. Gray of Champaign. "The Emergency Operation for Appendicitis and the Preparation for Same," Dr. W. K. Newcomb of Champaign. These papers were both interesting and instructive and brought out considerable discussion from Drs. Bryant, McMurray, Weber, Gore and Schmadel, and the discussion was closed by Dr. Newcomb. Dr. McCoy then presented his paper, "A Consideration of Cutaneous Carcinoma; Report of Case, with Photograph." This was an interesting paper and highly appreciated. A vote of thanks was extended to the visiting physicians for their excellent papers. This being our annual meeting, the following officers were elected: Dr. J. B. Bryant of Lawrenceville, president; Dr. J. F. Schrader of Bridgeport, vice-president; Dr. James Emmons of Pinkstaff, secretary-treasurer; Drs. B. F. Hockmon and H. V. Lewis, censors. The following applications were favorably received for membership: Drs. W. L. Kell and C. P. McAdoo of Bridgeport, Dr. W. I. Green of Sumner, and Drs. V. A. Funk and R. L. Gordan of Lawrenceville. The meeting then adjourned to meet at Lawrenceville the first Monday in March, 1910. After adjournment the Bridgeport physicians and their wives tendered a banquet to the visiting physicians and their wives.

C. M. LEWIS, Secretary.

LIVINGSTON COUNTY.

The eighteenth semi-annual meeting of the Livingston County Medical Society was held in the Dominy Memorial Library, Fairbury, on November 4. Twenty-five members were present and Dr. Collins, of Peoria, and Dr. Adams, of Gridley, were visitors. The four essayists were present and their subjects were fully discussed. G. T. Carson, of Chatsworth, read a paper on "Appendicitis," which was carefully prepared and showed that the doctor had spent considerable time upon the paper. Although an old subject so many good points were brought out that a most interesting discussion followed. C. U. Collins, of Peoria, read a paper on "Fractures of the Hip," and illustrated it with numerous drawings. He gave

several points upon the diagnosis of this common fracture and upon its treatment that were new to the medical men present. A. B. Middleton, of Pontiac, read a paper on "Failing Vision" which treated of this affection as secondary to many common diseases and urged the medical men to not always try to correct failing vision with glasses, but to look for the real cause in some of the vital organs of the body. L. P. Kuhn, of Fairbury, read a paper on "Hemorrhagic Erosions of the Alimentary Canal, Simulating Gastric Ulcer." This subject was well handled, and the difficulty confronted in the diagnosis of diseases of the stomach clearly defined. The physicians of Fairbury and neighboring towns tendered to the visitors a six o'clock dinner that upheld the reputation which they established at the previous meeting of this society in Fairbury. Dr. Middleton, acting as toastmaster, called upon Drs. Lewis, Carson, Collins, Ross, Barnhizer, Brewer, Adams, and Balke, who responded, thus ending one of the best meetings that this society has ever held.

JOHN ROSS, Secretary.

FAILING VISION AS A SECONDARY TROUBLE.

A. B. MIDDLETON, M.D., PONTIAC, ILL.

The subject I am about to consider at this time is a symptom that should interest the general practitioner more than any one else, because, as a rule, he is the first to be brought face to face with people suffering with this trouble. Early recognition of any pathologic condition that is causing the failure in vision is a very valuable one for the benefit of the patient's future eyesight, and the doctor's welfare, because if the cause is not discovered early and properly treated, many a patient might finish his days in partial or total blindness.

An examination of the interior of the eye makes it possible to investigate and study the condition of blood-vessels and nerves, which in the rest of the body are exposed only by surgical manipulation, while here they are unveiled before us and we are allowed to profit by their minutest variations. I might say in the beginning that the ophthalmoscope is fast becoming an indispensable aid in diagnosis, especially in general medicine, since there are so many internal and constitutional disorders, producing characteristic fundus changes many times long before other symptoms develop or are even suspected.

Science within the past few years has made very rapid progress and has taken wide strides in all of its many sections. The science of optics, a short time ago, was no more in demand than physics; the elements of each, as you know, are very similar. It has now, however, become a separate and distinct science, and there are many things in it to be considered of far greater value and importance than simply correcting errors in refraction with glasses taken from a trial case. A thorough knowledge of the eye in every part and particular is absolutely necessary in order to make a careful and an intelligent ocular examination, during which every part should be put through reliable and effectual tests.

It has not been long since the minute structure of the human eye, its embryology, pathology and motor power, with all of the many other parts, were only studied by a few who were fond of research work. It is to the hard work and patient study of these students that we are so much indebted for certain facts and the greater part of our present knowledge of physiologic optics and scientific ophthalmology.

Formerly most people with a slowly or even a rapidly failing vision were often looked upon, even by many medical men, as cases suffering with nothing more than a simple error in refraction, especially if they were forty years of age or older. They were often told that their trouble was simply old age and all that was required was a pair of glasses. The errors in refraction, if any, were corrected subjectively by the application of lenses taken from a trial case, and the glasses that would appear to give the best improvement in vision were ordered, the patient dismissed, and forgotten. Very seldom, if ever, was an interocular examination made in these cases.

I am glad to say things have changed. For an oculist of this day and age to practice ophthalmology along these slipshod, careless lines should be considered as criminal and inexcusable as it would for a surgeon to do a laparotomy with the same technique, environment, surgical preparation and precaution that were used in such cases forty years ago. You know well that a laparotomy performed at the present day under such conditions as were used in those days would mean most certain death to the patient. The same holds true with the old methods of examining the eyes of patients with no other symptom than simply failing vision.

Many eyes that are thought to be losing their sight owing to some refractive error might have a very serious trouble overlooked unless a perfect routine interocular examination is made and followed in every case. If a proper examination is not carried out some of your patients will eventually come to the same sad end as the laparotomy case, with this exception, instead of losing his life he might continue to lose his sight later, ending in total blindness, which is a twin brother to death. It goes without saying that an ophthalmoscopic record should be kept in every eye case, so that in the future reference might be made and facts learned which will be of great value in treating and advising these same people in years to come.

My time is too short to enter into a discussion on such an extensive subject as this, therefore I will pass on and show you a few water-color sketches that I have painted personally from the fundus of cases referred to me as simple cases of refraction. Most of these interocular changes would have been overlooked had it not been for a regular routine examination. These patients all had practically the same story, which was in substance: "My eyes are growing dim of late. I have gotten glasses from several places. They all appeared to help me at first, but in a short time they would not fit any more, and now I find myself just as bad as I was in the first place."

I see several doctors present who will recognize some of these pictures that I am about to pass among you as duplicate drawings of fundi that I have made for you from patients you have referred to me, therefore I hope in the discussion of this paper you will feel free to bring out the facts and points in your particular cases so that we may all profit by your experience. Some of these sketches were taken from people who did not come to me in my practice. I made them while I was locum third house surgeon in Moorfields Eye Hospital in London, England. True, they are rare cases, but, nevertheless, cases of this kind might present themselves at any time and we should be prepared to know them when they come.

There are so many interocular diseases that cause failing vision as their first symptom that I will not attempt to describe any one in full but will in the short time alloted touch lightly on a few of the most common by subject only.

These first pictures I hand you were made from cases of chorioiditis. There are nearly as many forms of this disease as there are cases, as no two cases are exactly alike. While, on the other hand, we are able to group them into classes by means of certain characteristics that are always present in certain forms of this trouble, I cannot describe or attempt to discuss such a broad subject as this in the few minutes I have at my disposal, but I must mention a few of the facts found in these cases.

Chorioiditis is one of the most common troubles we have to deal with that has as its first and most marked symptom a gradual failure in vision without pain or any external signs. I might say, in passing, that the chorioid is the main vascular supply to the vitreous portion of the eye as well as a partial supply to the retina. There is an absence of sensory nerves in the chorioid, therefore disturbances here are not accompanied by pain and an inflammation in the chorioid might become very extensive before we are given any warning of serious trouble. Its presence is found only by a careful ophthalmoscopic examination of the fundus, otherwise the patient might go on to blindness before he is aware of anything serious being wrong with his eyes.

There are cases of chorioiditis, however, where the inflammation comes forward in the uvea involving the ciliary body and iris. When the disease follows such a course it soon becomes very painful, due to a disturbance of the sensory nerve

terminals which are present in the iris and ciliary body. The cause of the disturbance of vision in chorioiditis is due to the inflammatory exudate accumulating in the chorioid which raises the retina, thus dsturbing it from its normal position which makes things appear distorted, illuminated, enlarged or smaller, which symptoms are better known as micropsia, macropsia, photopsia, etc. Later the exudate becomes absorbed, the chorioidal vessels atrophy or cicatrize; the retina over these places is involved and caught up in the scar, the retinal function being destroyed due to its having been displaced and deprived of its proper nourishment. These areas of atrophy many times account for the small positive scotoma we often find in taking fields of vision. I have one or two fields here to-day attached to a drawing of the same eye which shows nicely the positive scotoma and its relative relation to the patch of chorioiditis, in the fundus. You will see a short history attached to these sketches which will fully explain each case to you.

I now hand you a series of albuminuria cases beginning with one made about the very earliest we ever get to see a case and ending with one I made only one day before the patient died from the effects of his albuminuria. The albuminuria causes these changes in the vascular portion of the eye. The changes are exactly the same as changes caused by brain tumor, diabetes, or arteriosclerosis. The only means of differential diagnosis is the examination of the urine, which should be made in every eye case. The form of kidney disease resulting in albuminuric retinitis is most always the atrophic kidney. The severity of the retinitis bears no fixed proportion to the intensity of the kidney trouble nor to the amount of albumin in the urine. Albumin amaurosis or blindness in these cases is due to the poisoning and destruction of the centers of sight in the brain and not by the retinitis, because vision loss due to the retinitis is always slow. The field becomes smaller and smaller. There are periods of blindness followed by fair vision, and such actions continue on, while vision once lost due to brain poisoning positively never returns.

I show you a series of diabetic cases. Also these cases in many ways resemble albumin cases in the arrangement of the hemorrhages around the macula, yet they do not take on such a perfect stellate arrangement as in albumin retinitis. The disk is seldom altered and there are many punctate extravasations of blood between the white patches. These cases cannot be positively diagnosed either without making an anlysis.

I hand you some heart cases, also, to show you what may be expected in arteriosclerosis, hypertrophied heart, valvular disease, embolism, thrombosis, and many other vascular changes.

M'LEAN COUNTY.

At the October 7 meeting Drs. Mark C. Jones and J. Haskell Collins were admitted to membership; Drs. Frank P. Boyd, of Bloomington, and Walter G. De Tour, of Chenoa, were proposed, and referred to Board of Censors. On motion of Dr. F. C. Vandervoort, the Secretary was instructed to write a letter expressing appreciation and confidence to Dr. Cook, the discoverer of the North Pole.

The paper of the evening was by Dr. W. A. Balcke on

"THE DEMEANOR OF THE OBSTETRICIAN IN THE PRESENCE OF THE PATIENT."

In discussing the phases of obstetrical practice, a division may be made in the accomplishments of the obstetrician. On the one hand, he must possess a knowledge, which plays a part only in the guidance of his judgment as an operator. He must possess a fine knowledge of all anatomical parts involved in labor of both mother and fetus. He must be well acquainted with the actions of a normal labor, and must understand the working strength of all parts of a female body.

In short, he must possess a knowledge not shown to the patient, which is an ever guiding factor in the work of an accomplished accoucheur. On the other hand, he must possess a knowledge of the things to command for the good of his patient, and possess a working skill amply sufficient for the needs of obstetrical cases, for the patient and nurse await the immediate exercise of this knowledge and skill. Simply stated, the division is, the things he must know for himself to complete the work, and the things he must do in the presence of the patient. This latter division falls especially within the province of this paper.

The student of obstetrics is advised to possess himself of ample data concerning patient's condition during the months of pregnancy, to make repeated urinalyses, at least once every thirty days, etc. The value of such data is common knowledge with every practitioner, but to gain such in many cases is practically impossible. The physician's first intimation of such cases is often a call to attend a case in full labor. Much can be done by physicians in educating the people to the needs of such cases.

But to have a starting point we will follow the doctor at his call to deliver his patient. We will not question his quiet, unassuming entrance into the presence of his patient, his reassurance in bidding her a pleasant day, and his casual, though guarded conversation. These things are expected from a gentlemanly practitioner. A hurried entrance, unguarded speech, hasty removal of coat and cuffs in preparation of a first examination not yet timely, are certainly not good form. He should, soon after coming, according to the urgency of the case, ask to have preparations made for an examination and should prepare himself accordingly. He should first, however, tactfully gain consent of his patient to do so. To consider his prerogative to do so when he pleases may shock delicate womanhood and not result in confiding respect. In his own preparation the physician should observe a few simple regulations. He should remove coat, vest and cuffs, and should roll his sleeves well above the elbows. He should wear a surgical gown, should scrub his hands with soap and brush, and later use a good antiseptic solution on hands. Asepsis is well in surgery but antisepsis in general obstetrical practice.

Previous preparation of patient in the country is often impossible. If possible bowels and bladder should be empty. Antiseptic douches are of no special value prior to delivery, as the ordinary syringe douche does not render the vaginal tract sterile. When a previous antiseptic douche is indicated, the operator should perform the same by inserting index and second finger, the patient's thighs well flexed, while the nurse pours the solution into the opened parts from an open mouthed vessel. During the copious flow of the solution, the fingers should open all vaginal folds and cleanse them thoroughly.

Examination of patient. Abdominal palpation should precede vaginal examination and the following points observed: The contour of the abdomen. The presence of quickening. The location of fetal head, if outlined. Also whether the abdominal enlargement is receding from the region of the stomach. From vaginal examination the following should be observed: Local temperature. Condition of the lower bowel. Dilatation of the os uteri. The general presentation of the fetus and in primipara the relative size of the pelvis. If fetal head is not engaged, the patient is instructed to wait, preferably out of bed. With the advent of regular pains, with dilating os and head firmly engaged, the patient should be put to bed and the operator should be fully prepared for his duties. The patient should be in the prone position, with knees slightly elevated and arms to the sides. The side position or knee chest position should never be used unless especially indicated. What advantages such positions may possess for the patient are offset by disadvantages to the operator. The position of a woman in labor, assisted by a skilled accoucheur, should be on the back.

Much is said of too much vaginal interference. But the careful operator does not carry infection farther, if he carries it at all, from his tenth examination than from his first.

When the child is cleansed the umbilicus should be well oiled and cotton applied, folding the wadding under and over stump as it is drawn upwards over the abdomen. The writer does not favor the dry, umbilical dressing. After delivery of the child the operator should place his left hand over the uterus until the hard uterine wall can be felt. After a few moments of rest Credé's method of placental removal should always first be tried. The expelling contractions should generally be induced and not awaited. After the placenta is removed the operator's left hand should again rest on the abdomen over the uterus until it is well contracted and all danger of hemorrhage has passed. A well contracted uterus free from placental tissue will rarely cause excessive hemorrhage. The expelled placenta should be carefully examined. In some provinces of Germany physicians are required by law to keep the placenta in a solution for a period of time to prove its complete removal in case fever develops. Many physicians do not examine a placenta at all.

During the violent stages of labor many physicians give chloroform. This should not be general practice and when necessary great care should be exercised. It should be remembered that partial anesthesia is more conducive to cardiac failure under heavy strain than more complete anesthesia. A patient awake and mindful of her duty and responsibility can render valuable aid to the physician and often keep her tissues intact when otherwise they would be injured. Better no anesthetic when it can be avoided. The use of forceps to aid delivery should always be preceded by a sufficient cause. During instrumental delivery always remove forceps before face emerges from the perineum. Short, so-called quick delivery forceps should not be a part of a physician's equipment. A binder for the mother is a thing obsolete except for special indications.

Dr. Brown led the discussion. He differs from Dr. Balcke in that he uses chloroform in all cases unless patient objects. Also uses rubber gloves, and clean cloths or towels over band in supporting perineum. Dr. Bath followed discussion. He uses extension of limbs in latter part of labor, even having patient's limbs on the floor. It increases diameter of pelvis and relaxation of perineum. Dr. Hawks uses Sims' position in primipara. Dr. Sloan uses catgut in tears of perineum suturing vaginal membrane, leaving skin open for drainage.

General discussion followed.

MADISON COUNTY.

The annual meeting of the Madison County Medical Society was held in Alton, Ill., on the afternoon of December 3, and it was a rouser, nearly one-half of the entire membership of the county being present. Dr. S. T. Robinson presided and introduced our District Councilor, Dr. Carl E. Black of Jacksonville, who spoke on several important state matters and then presented a paper on "Fractures of the Spine," well illustrated by *x*-ray plates and photographs. Dr. Black is a great favorite with this society and his annual visit is anticipated with great pleasure.

Dr. F. W. Kerchner of Glen Carbon was admitted to membership by transfer card from the St. Clair County (Illinois) Medical Society, and Dr. W. C. Richman of Maryville was admitted to membership by application, the board of censors' report being favorable. The application of Dr. Chas. A. Moore was read and referred to the board of censors.

A resolution adopted by the American Medical Association, recommending one or more open sessions a year to which the general public is to be invited, was read and referred to a committee consisting of Drs. Pfeiffenberger, Burroughs and Ferguson, with instructions to report at the next meeting. The annual reports of the secretary and treasurer were read, and on report of the auditing committee approved and the secretary ordered to publish a financial statement and send a copy to each member. The annual election resulted as follows: President, Dr. G. Taphorn, Alton; vice-president, Dr. W. H. C. Smith, Godfrey; secretary, Dr. E. W. Fiegenbaum, Edwardsville; treasurer, Dr. J. H. Fiegenbaum, Alton; member of board of censors to serve three years, Dr. S. T. Robinson, Edwardsville. Those

present were Drs. Foulds, Pfeiffenberger, Ferguson, Threadgill, H. R. Lemen, Robinson, Wahl, Tulley, Sims, Earley, Kiser, Smith, Zoller, H. W. Davis, Schreifels, Yerkes, Fisher, Beard, G. K. Worden, Hastings, J. H. Fiegenbaum, Burroughs, Ihne, Moore, Cook, Johnson, Nina P. Merritt, Joesting, Wilkinson, Taphorn and E. W. Fiegenbaum. Adjourned to meet in regular session on the first Friday in March, 1910.

E. W. FIEGENBAUM, Secretary.

MORGAN COUNTY.

The Morgan County Medical Society met at the Library, Jacksonville, Thursday, November 11, 1909, at 8 p. m. Those present were Drs. Baker, Black, G. R. Bradley, G. W. Bradley, Campbell, Day, Dewey, Milligan, Hairgrove, Ogram, Reid, Stacy, Treadway and Woltman. Dr. J. W. Hairgrove acted as chairman in the absence of the president, Dr. C. E. Cole. The librarian, Dr. Carl E. Black, reported three substantial gifts to the library from Dr. Norbury and Dr. Abraham Jacobi. Dr. Walter L. Treadway, of Concord, was elected to membership. Dr. A. J. Ogram read a paper on "General Diagnosis," which laid special stress on the importance of thoroughness of examination as the only proper foundation for a clinical training of high character. Dr. E. F. Baker reviewed the history and present status of "Pellagra" as outlined by several of the leading authorities on the subject. This résumé brought forth quite a discussion by the members. Dr. G. R. Bradley reported a case of hepatic carcinoma.

GEORGE M. STACY, M.D., Secretary.

OGLE COUNTY.

The fourth quarterly meeting of the Ogle County Medical Society was held in the Supervisor's Room in the Court House at Oregon, Ill., Oct. 27, 1909. The meeting was called to order at 2 p. m. by President Beveridge. The minutes of the previous meeting were read by the secretary and approved. Roll call found the following members present: Drs. Alrutz, Beard, Beveridge, Hanes, Kretsinger, C. E. Powell, C. F. Powell, Replogle, Sheets and Schneider. Visitors present were Drs. Le Sage, Law and Murphy of Dixon, Dr. Stealy of Freeport and Dr. Cottlaw of Oregon.

Dr. H. A. Brennecke of Aurora read an interesting paper on this important subject, "Extrauterine Pregnancy." This paper was thoroughly discussed by Drs. Alrutz, Beard, Murphy and Stealy. Dr. D. A. Vanderhoof of Rockford, a former member of the society, read a paper on "The Tonsil," giving pathology, diagnosis and various methods of removing the tonsil. The discussion was opened by Dr. Le Sage of Dixon. The Doctor being a throat specialist, his discussion of the subject was interesting to all members present. The subject was further discussed by Drs. Alrutz, Beard, Brennecke, Murphy and Stealy. Drs. Stealy and Murphy were emphatic in condemning the use of chloroform as a general anesthetic. Dr. Stealy also condemned the use of Monsel's solution used as hemostatic under any consideration.

Dr. T. F. Alrutz, located at Oregon, who presented a letter from the Chicago Medical Society stating that he was a member in good standing, and Dr. C. F. Powell of Forreston were voted in as members of the society. The secretary was instructed to pay all bills. The next regular meeting will be held in Polo. The president appointed Drs. Powell and Maxwell to act as a committee on program for the next meeting. Adjourned to meet at Polo the third Wednesday in January, 1910.

DR. J. T. KRETSINGER, Secretary.

PERRY COUNTY.

The Perry County Medical Society met at Pinckneyville November 12, with Dr. J. S. Cleland, President, in the chair, and Drs. Templeton, D. O. Mead, and Gillis present. Dr. T. H. Roe, who was Secretary, having removed from the State, Dr. Gillis was elected to fill the unexpired term as Secretary.

After disposition of routine business cases of fracture of the femur were reported by Drs. Templeton and Mead and elicited a spirited general discussion of fractures. Dr. Gillis reported a number of cases of eye injury in coal mines which, though trifling in appearance, produced a rapid destruction of the eye. Dr. Templeton of Pinckneyville reported a case of infection of Skene's glands which was interesting and instructive.

Correspondence from the Bureau of Medical Education of the American Medical Association was read by the secretary and the subject of an open meeting of this society was discussed but no definite action taken. The Society then adjourned to meet at Pinckneyville, December 9, 1909.

J. S. CLELAND, M.D., S. Warwick, President.
F. P. GILLIS, M.D., Du Quoin, Secretary.

ROCK ISLAND COUNTY.

The Rock Island County Medical Society met at the New Harper, Rock Island, Dec. 14, 1909. After dinner the literary program was taken up as follows: Paper, "Pellagra," by Dr. M. J. O'Hevre; paper, "The Present Relation of Bovine Tuberculosis to Public Health," by Dr. A. H. Mueller. After this paper the following resolution was passed, after a careful survey of the subject by the society:

Resolved, That the Rock Island County Medical Society is opposed to the stand taken by Dr. James Egan, particularly on account of his position as secretary of the State Board of Health, and in the state medical society, relative to the non-communicability of bovine tuberculosis to man. At the present time this has not been positively proven, and because the communicability has been proven to the satisfaction of the vast majority of the medical profession, such propaganda may do endless harm and can do no good.

A committee was appointed to investigate the establishment of a county medical library. The society then adjourned. Twenty members were present at the meeting.

W. D. SNIVELY, M.D., Secretary.

RICHLAND COUNTY.

The Richland County Medical Society held a meeting in the council chamber at Olney, December 16, at 2 p. m., with the president, Dr. W. E. Fritchie, in the chair. The minutes of the last meeting were read and approved. The following officers were elected for 1910: President, Dr. E. H. Horner, Olney, Ill.; vice-president, Dr. G. S. Trotter, Dundas, Ill.; secretary and treasurer, Dr. Frank J. Weber, Olney, Ill.; medicolegal representative, Dr. A. T. Telford, Olney, Ill. Following the election of officers a general discussion of pelvic infections was taken up.

DR. FRANK J. WEBER, Secretary.

SANGAMON COUNTY.

The tenth annual meeting and banquet of the Sangamon County Medical Society was held at the Leland Hotel, Springfield, Nov. 8, 1909. Ninety-seven members of the society and guests sat down to an elaborate spread which had been prepared and were afterward addressed by Dr. Henry T. Byford, of Chicago, who spoke on "The General Practitioner and the Specialist," and by Hon. Wm. A. Northcott, who spoke on "The Lawyer and the Doctor." The committee on arrangements was composed of Drs. Bocock, Nelson and Palmer. Dr. Walter Ryan presided as toastmaster. The election usually held on this night will be held at the January meeting, when ample time can be given to the consideration of this important matter.

GEO. T. PALMER, M.D., Secretary.

UNION COUNTY.

The regular monthly meeting of the Union County Medical Society was held in the Science Room of Benton Hall, Union Academy, Anna, Ill., at 2:30 p. m., Wednesday, Nov. 24, 1909. The following members were present: Drs. J. J. Lence, W. E. Lingle, T. J. Rich, A. J. Lyerle, F. W. Willard, S. C. Martin, E. Cohn, Karl Sanders, J. C. Stewart and E. V. Hale, and two visiting physicians, Drs. E. L. Abbott and L. D. Smith.

President W. E. Lingle called the meeting to order and the above members responded to roll call. The minutes of the previous meeting were read and approved. Dr. J. C. Stewart read an excellent paper on "Diphtheria," which was discussed by all members present. Dr. Sanders reported a case of "Acute Anterior Poliomyelitis," which brought out some discussion. Dr. Cohn reported a very bad case of retrotonsillar abscess.

Adjourned.

E. V. HALE, Secretary.

WABASH COUNTY.

The Wabash County Medical Society held a regular meeting in Mt. Carmel November 1, at Dr. Maxwell's office in the Schneck Building, at 3 p. m., with a good attendance. Dr. Edwin H. Lescher read an able and instructive paper on "Typhoid Fever," with special reference to diagnosis and treatment. Dr. S. W. Schneck read a paper on "Emergency Surgery," which was well received and interesting and well deserves publication. The following officers were elected for the ensuing year: President, Dr. C. E. Gilliott, Allendale; vice-president, Dr. S. W. Schneck, Mt. Carmel; secretary, Dr. J. B. Maxwell, Mt. Carmel; treasurer, Dr. E. H. Lescher, Mt. Carmel; censor, Dr. W. H. Robinson, Mt. Carmel.

J. B. MAXWELL, Secretary.

THE SURGICAL TREATMENT OF EMERGENCY CASES.

S. W. Schneck, M.D., Mt. Carmel:—In the discussion of the questions before us, we are opening up a point in minor surgery but of major importance. In the treatment and dressing of emergency surgical cases we undertake:

1. To limit the injury; to do no more harm to our patient than it has done.

2. To repair as nearly as possible the injured part; bearing in mind that the first is the more important duty of the two. There are three salient factors in equipment for doing this work and we will discuss them separately: mental preparation, surgical equipment, and antiseptic technique.

1. Mental preparation: We cannot all be Senns, Ochsners or Mayos. We do not have the preparation, equipment or experience to make us such, but we can do clean, careful work in the most insignificant class of injury or we can be dirty and careless in everything we handle from the gravest case down to the care of our offices and even our own persons, so that we are a menace to whomsoever is unfortunate enough to live in the same community. The victim of accident does not always have a choice in selection of his surgeon, and often the call is answered by a physician who does not consider himself any part of a surgeon, or still more unfortunately does consider himself as such, when he is not. Any man who announces himself to the public as a surgeon should have a reasonable knowledge of anatomy, anesthesia, operative surgery and aseptic technique.

2. Surgical equipment: Any man who answers a call to a surgical case, or receives one in his office, should never have to admit that he could have done better had he been better equipped with some commonplace instrument, or dressing. This is not a matter of neglect, it is nothing short of criminal. The use of unsterilized dressings and instruments are the cause of at least one-third of the infections. The other two-thirds are due to the use of strong antiseptics, which coagulate the albumen on raw surfaces and form a breeding ground for infections. Use thorough flushings with hot normal saline or boric acid solution. Boil all instruments both before and after using. You cannot sterilize instruments by looking wise or with hot air. You must have some way of getting hot water

quickly and should always have a receptacle of cold sterilized water plugged up dust proof to cool your hot water. Sterile bandages, cotton and gauze are cheap and always needed. This does not mean a roll of cotton with the paper torn off and which has rolled over the floor and been handled with hands covered with pus after treating an infection of some sort. By all means have a couple of rolls of zinc oxid adhesive plaster. It is being used more and more every day to immobilize strained joints, fractured ribs and clavicles and to hold other dressings in place; besides, the patient rarely ever attempts to remove them, especially if the plaster is of a good adhesive sort. Do not fail to have several plaster of Paris bandages on hand, for you will need them some time and, the chances are, will want them very badly when you do. Safety pins, straight pins, a small rope and pulley and an assortment of thin boards of various lengths are good friends in time of need. Chloroform, ether, carbolic acid, boric acid, collodion, alcohol, glycerin and bichlorid of mercury cannot be dispensed with in any emergency bag, much less in the office.

In the matter of instruments, we must be prepared to stop hemorrhage and to resuscitate an exsanguinated patient; so have your hypodermic case, a tourniquet or rubber bandage, fountain syringe and a large needle suitable to give a saline infusion. Do not buy too many knives; you can cut a leg off with a one and one-half inch knife, and saws; but be sure to have a trephine and a De Vilbiss skull cutting forceps and at least one good bone nipper. Often after arriving on the scene of action the careless surgeon has some willing fool half kill a horse going back to town for needles and proper sutures. That is certainly bad form, and he alone is to blame for not putting them in his case and leaving them there. (That happened to me once, but only once.) This whole equipment does not cost over $30 or $35, excepting a few blankets, which you might borrow from home; but be sure and get them to the office some way or other with an abundance of clean sterilized towels and a few pieces of muslin, one yard square, for slings. By the way, you can bandage any portion of the body with a 36-inch triangular bandage, if you only take the time to find out how it is done. Everyone here can find something to add to this list which is indispensable to him, but no one can afford for one day not to have everything mentioned.

3. The antiseptic technique: Surgery, and especially emergency surgery, is in a great measure successful or a failure, other things being equal, whether or not the case develops an infection of bacterial germs, and this section of our discussion with few sentences excepted may sound like a succession of dont's, because by not committing some common errors we may eliminate the greatest number of infections. Remember that the skin in a large number of patients contains bacteria which infect wounds, but do not cause any symptoms in the unbroken skin, or mucous membrane. Here is where we get our recurrent cases of erysipelas. So do not think a douche of bichlorid is going to give you a wound free from germs, especially if you have never sterilized your hands, or have handled chairs, tables, patients, mouths of dirty patients, even if you did sterilize them ever so carefully but an instant before.

Let someone else take the clothing off the injured member, and scrub him with sterile water, green soap and a good stiff brush; then wrap the wounded part and all the patient's person, and clothes, which are near the wounded part, with towels soaked in 1/5000 bichlorid solution. When a hand or foot is injured, trim the nails as closely as possible and scrub clean. Use gasoline or one of the dirt removers which comes as a paste, to get every particle of dirt off the surface. Then douche or soak in hot aseptic solution, normal saline or boric, not corrosive sublimate or carbolic acid, and be sure that your first step is to remove all blood clots and bruised tissue from the wound. Any tissue which will not live is only a breeding place for infection. Don't fail to explore thoroughly all wounds (especially scalp wounds for depressed fractures). It makes you feel cheap to have to open up, after you have placed your sutures. I once found a piece of tin three-eighths by three-fourths inch at the very posterior orifice of the bony orbital fossa after I had enucleated the shattered eye ball; a good chance for a malpractice suit had I not accidentally found it with the scissors' point while severing the

optic nerve. Don't brush the skin about a wound with a gauze or cotton compress and then use the same compress in the wound. Don't rub a wound, or you produce hemorrhage and increase liability to infection. Mop it. Keep your fingers out of it.

If you have reason to believe that a wound will become infected, use an antiseptic douche and follow it with a sterile solution. Dress with drainage. Don't put adhesive plaster next an open wound or raw surface; it becomes nasty from the serous discharge, which comes from all such surfaces and often causes infection in this way; besides, it deters the natural process of skin growing. Dusting powders act much in the same way. Use them only in selected cases. A much cleaner dressing is to saturate the gauze in boro-glyceride, which may be thinned with alcohol, if you desire. Do not use cotton at all but plenty of sterilized gauze. This dressing does not stick and is by far safer and much more comfortable. Don't take any suggestions from the patient or the mother of a wailing child about the treatment of a case. Put in the sutures, if it is necessary, and they always thank you when the wound is healed. Patients become good or poor signs of your surgical skill in the days to come, depending on your adherence to the principles of good clean surgery. Don't get nervous or faint hearted in the presence of gravely injured patients or their friends; it loses you prestige. If you abhor the work do not respond to the calls: others might enjoy it.

The antiseptic technique can be gotten by instruction and careful attention to details, but most of all by a never failing vigilance and keeping constantly in mind every act, even every move we make while in the presence of any surgical case. By all means look for numerous injuries, especially in an unconscious or anesthetized patient, and when found treat each one with due care. The small punctured wound is most liable to a serious infection. Carbolic acid is much more deadly than any other germicide. Don't forget the antitetanic serum and rather use it a dozen times needlessly than to take one chance that loses. Impacted fractures should never be broken up, or three or four doctors each take a pull on the member to make sure how securely it is impacted.

The greater number of examining fingers put into a wound the more certain are we to get infection. Don't be afraid to take out as many sutures as is necessary to open a pus discharging wound, and cleanse it most carefully.

WILLIAMSON COUNTY.

At the October, 1909, meeting of the Williamson County Medical Society, the following officers were elected for the ensuing year: T. H. Shastid, president; J. G. Parmley, secretary. At the November meeting Dr. J. G. Parmley (our secretary) was elected representative to the Medicolegal Committee. We did not feel able to send two men to the state meeting next year, and hence made one and the same man our secretary and medicolegal representative.

T. H. SHASTID, President.

NEWS OF THE STATE

PERSONAL.

Dr. Henry E. Wagner, Chicago, has returned from Europe.

Dr. William E. Washburn, Kewanee, received internal injuries in the overturning of his automobile at Cherry, November 21.

NEARING THE CENTURY MARK.—Dr. William B. Hart, of Greenwood, will, on Jan. 1, 1910, celebrate his 98th birthday. He is still hale and hearty.

Dr. George Edwin Baxter, assistant editor of THE JOURNAL, has returned from six months' European travel and study, most of the time in Vienna.

Dr. Adolphus P. Standard, assistant surgeon at St. Francis Hospital, Macomb, has resigned, and will take charge of the new Graham Hospital at Canton, as medical superintendent.

Dr. Charles E. Colwell, Aurora, has been elected president; Dr. Oliver H. P. McNair, Batavia, vice-president, and Dr. R. S. Denney, Aurora, secretary-treasurer, of the Aurora Hospital.

Dr. William L. Secor and family, of LaGrange, are spending the winter in Florida. Dr. Secor has been made physician-in-chief of the new Ponce de Leon Sanitarium, St. Petersburg.

Dr. Thomas Jonnesco, of Bucharest, visited Chicago, December 21 and 22, demonstrated his technic of spinal anesthesia at the Cook County Hospital, and also delivered an address on the same subject before the Chicago Medical Society.

NEWS ITEMS.

—The Palmyra Springs Sanitarium at Palmyra, Wis., has been closed.

—The cornerstone of the addition to the Norwegian Lutheran Deaconess Home and Hospital, Chicago, was laid November 25. The new building is to cost $75,000.

—The people of Rochelle have subscribed $22,000 of the $35,000 required to make effective the offer of Emanuel Hilb of $15,000 for the establishment of a hospital in Rochelle.

—The medical staff of Graham Hospital, Canton, has elected the following officers: Dr. W. F. Zeigler, president; Dr. M. A. Richardson, vice-president; Dr. J. P. Colman, secretary.

—Dr. S. W. Jacobs, president, and H. M. Brown, of the National Aid Society of Chicago, were arrested November 30 for obtaining money under false pretenses from several physicians.

—The campaign in Monmouth for a new hospital was inaugurated November 29. It is expected that $30,000 will be raised for the erection of a new building, and half of that amount has already been secured.

—Dr. Joseph D. Silva of Rock Island has recently acquired the Harper House, the best hotel property in Rock Island, and spent $40,000 in extensive improvements. The new hotel was opened for business Nov. 27, 1909.

—The Champaign local branch of the American Health League held its second meeting of the year, November 11, at the Urbana court house. Prof. J. M. White addressed the members on "Why We Need Fresh Air and How to Secure It."

—An explosion in the furnace of the American Hospital in Chicago, November 28, wrecked the heating plant and caused considerable excitement among the patients. Dr. Max Thorek thought that the explosion was caused by dynamite in the coal.

—The clinic of the Chicago Tuberculosis Institution, now held twice a week at the Northwestern University Medical School, was transferred December 6 to the Post-Graduate Hospital. The clinic days and hours will remain the same, Mondays and Thursdays from 10 to 12.

—A "brief" of 610 pages was filed in the State Supreme Court by Louis D. Brandies, of Boston, upholding the ten-hour law for women workers. Only three pages of this is based on the law. The rest is an argument based on medical testimony as to the effect of excessive hours of work on girls and women.

—Dr. J. B. Murphy, Chicago, was awarded a judgment for $22,000 by Judge Wright against William J. Hilands, a New York promoter, last month. The amount consists of principal and interest of a sum invested in the National Bread and other enterprises upon alleged fraudulent representations of Highlands.

—The City Prosecuting Attorney filed suit, December 27, against Dr. John G. Craig, Chicago, for exposing persons to smallpox by sending a patient to the office of Dr. Spalding, Chief Medical Inspector, and for failure to report the case to the Health Department. The suit may not be heard until the patient is available as a witness.

—Dr. Harvey W. Wiley testified that two pounds of boric acid were used to preserve each 100 eggs in a shipment of preserved eggs seized in Peoria last March by government inspectors. Judge J. Otis Humphrey of the Federal Court, December 10, decided that the seizure was justified, as the eggs were injurious to health. Eggs should be, like Cæsar's wife, "above suspicion."

—Ten thousand dollars was added to the building fund of the Maimonides Kosher Hospital by the week's bazar at the West Side Auditorium, which closed December 14. A ball arranged for by the bazar committee was held at the same place, December 19. At present the fund amounts to $20,000, and the structure will be completed next summer. It will cost $75,000.

—Dr. Charles B. Fry, Mattoon, for many years local surgeon of the Illinois Central and Big Four railroads, who is soon to retire from practice and leave the city, was a guest of honor at a meeting of the railway employees of the city, November 30. The superintendent of the St. Louis

division of the Big Four presented Dr. Fry, on behalf of the employees, with a handsome traveling bag. The local employees of the Illinois Central presented him with a diamond stud and an Elk charm.

—The judges of the Municipal Court, Chicago, have decided to endorse the report of the committee of the American Institute of Criminal Law and Criminology and apply it in the trial of their cases. Under this system the inherited tendency to crime will be considered, and careful records will be kept of the physical and moral status as well as the heredity and environment of offenders. Chief Justice Olson said: "It is a great thing, and is the inception of a great stride toward a more enlightened treatment of our criminals."

—The physicians of Lewistown, Fulton County, have formed a club for mutual benefit and harmony. On November 9 the organization was completed, and will have regular monthly meetings hereafter. A fee-bill was adopted, which will go into effect December 1. All the physicians of the city united in signing this bill, and it is believed that a much better condition will prevail from this time in Lewistown. The following officers were elected: Dr. D. D. Talbott, president; Dr. Eli G. Davis, vice-president; Dr. William S. Strode, secretary; and Dr. Samuel Oren, treasurer.

—All of the buildings of the new Cook County Infirmary, on which work was begun last spring, are under roof, and the present indications are that the buildings will be ready for occupancy by the middle of January. The institution, when completed, will have cost $1,750,000, and will accommodate about 1,800 inmates, with ample provision in the general scheme for the erection of additional buildings as required. On the highest spot on the ground has been built the hospital for tuberculosis patients, 300 feet away from the nearest building of the central group.

—Dr. Charles S. Bacon, in his illustrated talk on Certified Milk in Chicago, in the public library building, November 27, spoke of the organization of the Milk Commission of the Chicago Medical Society, and stated that three country dairymen had been induced to sign contracts drawn up after the pattern of the national form, and had agreed to conform to the rigid demands of the commission. In return for this, the commission gives each dairyman a copyrighted trade-mark bearing the certification of the society, which appears on the label or stopper of every bottle.

—Thomas Foulkes, a stock-raiser of Danbury, Iowa, recently recovered a judgment of $2,200 against Dr. Francis M. Steward, of Chicago. Foulkes testified that in 1901 he was met by men who deceived him into believing he was going blind, and took him to Steward. Steward charged $1,500 for treatment. Upon charging Steward with fraud, Foulkes was told if he brought certain letters back to Chicago the money would be returned. Foulkes said he came and while with Steward was seized by a man representing himself to be a health officer, who told Foulkes he had smallpox, kept him a prisoner several days and released him only on payment of $500.

MEDICAL SOCIETY NOTES.

—The Alton Medical Society held its first banquet, November 18, at the Illinois Hotel. It was attended by twenty physicians and their better halves.

—At the annual meeting of the Kewanee Physicians' Club, November 4, Dr. F. J. McDermott was elected president; Dr. H. N. Heflin, vice-president; Dr. G. H. Hoffman, secretary-treasurer.

—At the tenth annual banquet of the Sangamon County Medical Society held at St. Nicolas Hotel, Springfield, November 8, there was a large attendance of members of the profession. Dr. Walter Ryan, president of the society, presided. Among the speakers were Dr. Henry Byford, Chicago, and Hon. W. A. Northcott, Springfield.

—The thirty-sixth annual meeting of the North Central Illinois Medical Associaiton was held in Streator, December 7 and 8, and the following officers were elected: President, Dr. Franklin A. Turner, Sandwich; vice-presidents, Drs. Alford E. Owens, Princeton, and Thomas W. Burrows, Ottawa; secretary-treasurer, Dr. George A. Dicus, Streator (re-elected); and censors, Drs. John C. White, Seatonville; Charles A. E. LeSage, Dixon; Joseph I. Knoblauch, Metamora; John M. Kaiser, Somonauk; and Alonzo B. Middleton, Pontiac. Life memberships were conferred on Drs. Charles E. Cook, Mendota; Alfred E. Owens, Princeton; Thomas H. Settler, PawPaw, and Benjamin F. Landis, Tiskilwa.

PUBLIC HEALTH.

—Hygienic paper drinking cups in penny-slot machines have been installed in the Northwestern depots and trains.

—It is thought that more than 3,000,000 Red Cross stamps were sold during the holidays to raise funds for the Chicago Tuberculosis Institute.

—Twenty-eight boarding pupils and nine Dominican sisters of St. Mary's Academy at St. Charles were placed under quarantine on account of scarlet fever in November.

—President William Busse, of the Cook County Board, in his annual message, advocates rebuilding the old parts of the hospital, to cover an entire block 600x400 feet. This would accommodate about 2,500 patients.

—School medical examination in Oak Park by Dr. Guy Conger disclosed over 52 per cent. of pupils with defects of the nose or throat; 13 of hearing, 48 of sight. It was found that nearly one-half of those examined last year showed much improvement, due to medical treatment in the interim.

—Rock Island has contracted for an up-to-date filter plant of the mechanical or American type. The building will contain six filter units built of reinforced concrete, each having the capacity to furnish 1,000,000 gallons of purified water in twenty-four hours. Each one can be cleaned independently of the others. The present three-filter basins will be used for sedimentation and adding the coagulant solution.

—The Bulletin of the Chicago Department of Health estimates the approximate cost of tuberculosis to the public of Chicago during the year 1908, was $23,635,000, which is considered a conservative estimate. The items included the money value of lives lost, which varied from $300 to $6,500, the wages lost, the cost of illness and loss of wages. During nine months of the current year 2,957 deaths were reported from tuberculosis and 3,024 new cases were reported.

—The flat building was denounced at the second annual banquet of the Cook County Real Estate Board. E. R. Pritchard said: "If our citizens are allowed to keep on inhabiting these flats, we will become a race of physical degenerates. They don't raise big men in flats." Rev. R. A. White said: "I want to urge you men to continue to sell homes to people; every man who buys a home becomes a permanent resident, also becomes a better citizen than he was before he bought that home."

—The Rotary Club is circulating a petition to the council to appropriate $2,000,000 to the work of the Chicago Department of Health. The proposed amount would compare favorably with the fund at the disposal of the New York health authorities. The estimate reported by the financial committee for the health department for 1910 is $535,972, which is $71,898 *less* than the appropriation for 1909. It is said that Dr. Evans offered to reduce his own salary 10 per cent. so that the amount could be added to the salary of Mr. Ball, chief sanitary officer.

—Another "cold-air cure" has been conducted the past three months under the direction of Principal William E. Watt, of the Graham School. "The children are delighted," said Principal Watt, "to breathe pure air all day, in school and out. They are not compelled to sit in a room under such conditions, but there are many more clamoring to get in. It has been a most successful experiment. Their resistance to disease has been raised and they are much more healthy." A room containing first-grade pupils was seen recently with windows wide open and the children studying with their wraps on.

—Dr. E. Fletcher Ingals, president of the Chicago Sanitarium Association, has been active in planning for the establishment of a sanitarium for incipient consumptives. The purpose of the institution is to furnish persons of moderate means a place to be treated at moderate cost and where they can be partially self-supporting. Twenty-five prominent physicians and a number of business men are working on the plans for the colony, which may be located on the Valmora Ranch of 1,000 acres near Las Vegas, N. M. It is said that $50,000 is already pledged to start the project, and more money is to be raised to purchase and equip an institution that will accommodate 300 patients.

—The Juvenile Protective Association, through its attorney, Harry E. Smoot, has begun a new war against tuberculosis. The arrest of Stanley Buras charged with expectorating on the floor of his home after repeated warning from doctors and nurses, is only a start against neglectful parents. "We intend to prosecute every case of the kind brought to us or that we discover. It has been the rule for everybody to throw up both hands and retire in defeat when consumptive parents are slov-

enly. It shall be the rule in the future that the law will step in instantly to the rescue of the helpless children. We are going to make these prosecutions just as much a matter of course as taking a drunken man to a police station."

—Dr. G. B. Young, surgeon in charge of the Marine-Hospital in Chicago, takes exception to the statements claiming that the expense of treating patients at this hospital are higher than in other government institutions. He is reported as saying "that patients can be sent to first-class private hospitals for less money, but they will not receive the care of first-class patients that is given them here." There are twenty-two employees, including the officer in charge of the down-town dispensary. The reason that these cost more than a civil hospital is that every one working here receives a salary. In a civil hospital physicians attach their names to the hospital's roster for the prestige and opportunity it gives them for extending their knowledge. Patients are cared for by internes who are completing their education, and nurses from nurses' training schools work for the practice it gives them.

—Dr. W. A. Evans, Commissioner of Health, Chicago, criticizing the over-head heating system adopted in the schools several years ago, in an article on "Hygiene of Schools and School Children," in the current number of the *Educational Bi-Monthly,* says: "The air should be introduced under the seats through ducts having many openings. The exit should be at the ceiling. The inlets and exits for air should be so arranged as to permit only the smallest degree of admixture of the foul and fresh air. It is not alone that the foul air is full of carbon dioxid and other excretory gaseous substances, but that it contains a bacterial flora which should be led out of the breathing zone as rapidly as possible. The bacteria which one child has coughed, sneezed or even breathed out should be lifted as rapidly as possible above the breathing zone of the other children."

—It is reported that the National University Medical School of Chicago, through L. D. Rogers, vice-president, has started a mandamus suit and action for $500,000 damages against the State Board of Health in the Superior Court, Chicago. The mandamus bill charges the State Board had no authority to publish a list of medical schools which they decided were in good standing. It is alleged that the board had discriminated unjustly, favoring some and showing a malicious disposition toward others. This is the second time the school has been in bad odor with the Board of Health. The diplomas were not recognized from June 20, 1907, to September, 1908. The school was again declared not in good standing April 14, 1909. The bill asks that the members of the board be compelled to recall their action and again declare the school in good standing and admit their graduates to examination.

—Dr. W. A. Evans, in an address to the City Club, intimated that there was trouble ahead unless more money is spent for the preservation of public health. "In 1856 Chicago spent 40.8 cents per capita to preserve its public health," he said. "This was reduced until in 1861 the expense

was 1.2 cents a person. Then h—l brooke loose. Cholera came. This year we have spent 25.3 cents per capita—15 cents less a person than before the war. New York does not have quite twice the population of Chicago, yet the New York health department spends nearly eight times the amount of money that the Chicago department does. This year we spent $10,000 (in the summer campaign) and have saved the lives of 500 babies. If we could get twice that amount we could save 2,000 babies. Because of the lack of money babies die. We save our gold and thereby kill the babies. I believe with all the sincerity my nature is capable of that we are operating the health department as economically as is any other business in Chicago, either private or public. A dollar buys as much there in material and labor as it does in any other part of the city. The men in the health department are working their heads off. Some of them are on duty this afternoon while most of the city are at leisure. Some of them will be working until 10 or 11 o'clock to-night. Some of them will be working to-morrow. The employees of my department are underpaid. They don't get what they earn. They don't get what they are entitled to. Chief clerks in other departments get more than the heads of bureaus do in my department. Compare the ability and experience of the doctors in the health department with that of the lawyers in the legal department. Take the salaries of each—but I guess I had better not go on with that comparison."

INCORPORATIONS.

Dr. Rainey Medicine Company, Chicago; capital stock increased from $25,000 to $50,000.

Whiteside Public Hospital, Sterling; establish and maintain hospital; incorporators, Stephen A. Allen, Frank Anthony, Frank W. Broderick.

Crescent Medical University, Chicago (not for profit); give instruction in arts and sciences; incorporators, Alexander Chittick, J. Nelson Barnes, D. H. Waggoner.

West Side Clinical Circle, Chicago; scientific, fraternal and social; incorporators, George Halperin, M.D., Alexander S. Hershfield, M.D., Meyer H. Lebensohn, M.D.

National Herb Remedies Company, Chicago; capital, $30,000; manufacturing and selling herb preparations; incorporators, William B. Mey, Ernst Schmidt, Erwin Breyer.

Practitioner's College, Chicago; capital, $2,500; conduct hospital, dispensary and training school for nurses; incorporators, Floyd Ramp, Wendell A. Diebold, Irvin I. Livingston.

Medical and Hospital Aid Association, Chicago; capital, $2,000; furnish medical and hospital services; incorporators, George E. Q. Johnson, Alexander M. Smietanka, Charles P. Molthrop.

REMOVALS.

Dr. Ward Akester has removed from Casey to Clay City.

Dr. F. G. Dufour has removed from Oquawka to Chenoa.

Dr. C. E. Duncan, of Flora, is now located at Vincennes, Ind.

Dr. R. O. Brown has removed from Mount Morris to Forreston.

Dr. R. H. McKnight has removed from Clay City to Kansas, Ill.

Dr. M. Harris and Dr. H. J. Schmidt are now located at Newton.

Dr. Effie Current has removed from McCook, Neb., to Brush, Colo.

Dr. Thomas M. Aderhold has removed from Zeigler to El Reno, Okla.

Dr. H. M. Austin has removed from Hindsboro to South English, Iowa.

Dr. Joseph M. O'Malley has removed from Amboy to Ohio, Bureau County.

Dr. J. L. Cass has removed from Pawnee to Hinckley, DeKalb County.

Dr. William Mauritz has removed from 833 W. Sixty-third Street, Chicago, to Morrison.

Dr. E. M. Barnes has removed from 78 Illinois Street, Chicago Heights, to Troy, Iowa.

Drs. A. J. and M. B. Newell have removed from Onarga to W. One Hundred and Twentieth Street, Chicago.

Dr. Carrie K. Bartlett has removed from 787 W. Diversey Street, Chicago, to Texarkana, Ark., R. F. D., No. 6.

Dr. C. E. West, of Lincoln, has located at Sixth and Capitol avenues, Springfield, as an eye, ear, nose and throat specialist.

MARRIAGES.

Harry X. Cline, M.D., to Miss Grace Goodall, both of Marion, December 7.

Arthur Edison Gammage, M.D., Chicago, to Miss Myra Gillis of Rio, November 4.

Augustus Stout Hunt, M.D., to Miss Tossie Mains, both of Jerseyville, December 8.

Albert Havens, M.D., to Miss Gertrude Crabtree, both of New Philadelphia, November 20.

John Jacob Rudin, M.D., Galesville, to Miss Jessie M. Nash, of Mansfield, November 13.

Henry Frost Hooker, M.D., Danville, to Miss Nellie McGrath, of Green Bay, Wis., November 25.

James Alexander Harvey, M.D., to Miss Regina Jones, both of Chicago, at New York City, November 30.

DEATHS.

AMY T. MACE, M.D., Harvey Medical College, Chicago, 1897; died at her home in Chicago, Oct. 15, 1908, from splenic leukemia, aged 59.

JOHN A. FITZPATRICK (license, Ill., 1880); of Lemont, Ill.; died in St. Joseph's Hospital, Joliet, Ill., December 1, from hemorrhage, aged 55.

THOMAS B. HICKS, M.D., Cleveland (Ohio) Medical College, 1872; died at his home in New Haven, Ill., December 3, from injuries inflicted by an insane patient, aged 68.

CHARLES CARROW THOMPSON, M.D., Kentucky School of Medicine, Louisville, 1872; Baltimore Medical College, 1892; died at his home in Taylorville, November 4, from multiple neuritis, aged 60.

JOHN CLINTON BARNES (license, years of practice, Ill., 1877); for forty-four years an eclectic practitioner of Illinois; died in a hotel in Arcola, Ill., November 23, from acute nephritis, aged 74.

ALLEN PERRY JOHNSTON, M.D., Rush Medical College, Chicago, 1906; of Chicago; formerly an interne in the Chicago Policlinic Hospital; died at that institution, February 10, from pneumonia, aged 32.

CHADS D. CHALFANT, M.D., Western Reserve University, Cleveland, Ohio; a member of the Illinois State Medical Society; died at his home in Streator, November 22, from diabetes.

JAY JUDSON THOMPSON, M.D., Chicago Homeopathic Medical College, 1888; professor of surgery in Hering Medical College, Chicago; died at his home in that city, November 22, from cerebral hemorrhage, aged 52.

JOSEPHINE E. MCKENZIE ROBERTS, M.D., Hering Medical College, 1897; assistant to the chair of diseases of women in that institution; died at her home in Chicago, November 8, from angina pectoris, aged 59.

WILLIAM J. LAIRD, M.D., College of Physicians and Surgeons, Chicago, 1896; formerly surgeon of the Bay de Noc Company, at Nahma, Mich.; died in Englewood, Chicago, November 15, from pulmonary tuberculosis, aged 45.

CHARLES ALBERT PALMER, M.D., Northwestern University Medical School, Chicago, 1876; a member of the American Medical Association; for seven years a member of the Board of Education of Princeton, Ill.; twice mayor of Princeton; for a time president of the Board of Health, and a member of the local pension board; died at his home in Princeton, November 6, from pernicious anemia, aged 54.

JOHN JAY HARDIN CONNER, M.D., University of Michigan, Ann Arbor, 1877; a member of the American Medical Association; surgeon of the Springside Coal Mining Company and Pana (Ill.) Coal Mining Company; secretary of the local pension board; formerly president of the District Medical Society of Central Illinois; and ex-secretary of the Pana Board of Health; died at his home, November 10, from acute endocarditis, aged 60.

ALFRED D. KOHN, M.D., Rush Medical College, Chicago, 1898; a member of the American Medical Association; in 1907 and 1908 a member of the Chicago Board of Education; assistant in medicine in Rush Medical College; chief of the clinic on gastrointestinal diseases of the United Hebrew Dispensaries; attending physician to Michael Reese Hos-

pital; a specialist on diseases of the stomach and intestines; died in the Michael Reese Hospital, December 2, from cerebral hemorrhage, eight days after an operation for appendicitis, aged 40.

Book Notices.

DORLAND'S AMERICAN ILLUSTRATED MEDICAL DICTIONARY. A new and complete dictionary of terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Nursing, and kindred branches; with new and elaborate tables and many handsome illustrations. Fifth revised edition. By W. A. Newman Dorland, M.D. Large octavo of 876 pages, with 2,000 new terms. Philadelphia and London. W. B. Saunders Company, 1909. Flexible leather, $4.50 net; indexed, $5.00 net.

The aim of the author of this work has been to produce, in a volume of convenient size, an up-to-date Medical Dictionary, sufficiently full for the varied requirements of all classes of medical men. Physicians and students have long felt the need of such a work. The book does not claim to be an encyclopedia; it is a dictionary, a concise and convenient word-book, aiming to furnish full definitions of the terms of medicine and kindred branches, and such collateral information as medical men generally would be likely to look for. The author has sought a middle course between the large, unwieldy lexicon and the abridged students' dictionary, avoiding the disadvantages of each.

Besides the ordinary dictionary matter, it has seemed desirable to include a large amount of information arranged in tabular form. In addition to the usual anatomic and clinical tables, there will be found specially prepared tables of Tests, Stains and Staining Methods, Methods of Treatment, etc., which, it is believed, will prove of distinct value.

The important features of pronunciation and derivation have received the most careful attention. The system used for expressing the sounds is extremely simple, and yet it indicates with accuracy the exact pronunciation of the words.

A special feature has been made of those words in the realm of biology which occur so frequently in the literature of physiology and pathology. Much new matter has been added covering the terminology of parasites, especially the protozoa; the B. N. A. anatomical terminology has been included, and the latest classification of the proteins has been adopted. It is believed that the pictorial features of the work have proved very acceptable to users of the book, and these have been enhanced by the addition of a plate showing the regions of the body according to the terminology of the B. N. A.

MEDICAL GYNECOLOGY. By S. Wyllis Bandler, M.D., Adjunct Professor of Diseases of Women, New York Post-Graduate Medical School and Hospital. Second revised edition. Octavo of 702 pages, with 150 original illustrations. Philadelphia and London: W. B. Saunders Company, 1909. Cloth, $5.00 net; half morocco, $6.50 net.

This book has been written as a result of frequent inquiries for a work dealing with the non-operative side of gynecology. It represents, with elaborations, a grouping and rearrangement of his clinical lectures. The various topics have been reviewed from the standpoints of the symptoms, the disease, the bimanual and microscopic findings, and the general physical and nervous state.

Operative procedures have been viewed as a last resort in those numerous conditions where medical means can accomplish so much. In no field of medicine is conservative treatment of greater value, but, combined with this, there is needed a knowledge of the relation of normal and pathologic genital functions to the general physical and psychic health of women.

The chapters on electricity and hydrotherapy have been enlarged. Several pages on head zones have been added as an aid to diagnosis. Various other additions have not interfered with the purpose of keeping this book within the limits which tend to make a practical working compendium.